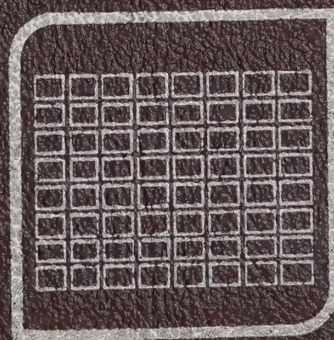


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CITY OF TRACY
GENERAL PLAN


Volume II
City of Tracy General Plan:
Technical Supplement and
Environmental Impact Report

March 1982

Prepared for the City of Tracy by
Blayney-Dyett, Urban and Regional Planners

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INTRODUCTION: REPORT ORGANIZATION

State Planning Law calls for nine elements: Land Use, Circulation, Housing, Conservation, Open Space, Seismic Safety, Noise, Scenic Highways, and Safety. In addition, Tracy desires Recreation, Public Facilities, and Energy Elements.

A problem in organizing a General Plan report is covering the state's nine mandatory elements without confusion or duplication. If, for example, the Open Space and Land Use Elements are independent, a reader would not know where to find agricultural land policies. For simplicity, the 12 elements are grouped in three General Plan sections:

Land Use and Circulation Section

(Land Use, Circulation, Scenic Highways, Open Space, and Recreation and Public Facilities Elements)

Housing Section

(Housing Element)

Environmental Factors Section

(Conservation, including energy conservation, Noise, Safety, and Seismic Safety Elements)

The City of Tracy General Plan consists of the text and plan maps in Volume I, City of Tracy General Plan: Plan Policies. The reader who wants to determine consistency of a proposed project with the plan need consult only this volume. Volume II, City of Tracy General Plan: Technical Supplement and EIR, contains the background information on the issues that have resulted in the plan policies, as well as the EIR on the plan. The EIR must be certified as complete before the plan is adopted, but Volume II material is not suitable for adoption as policy, even though some of the information may become the basis for ordinances or programs to implement the General Plan. Volume I will be referred to throughout all of the documents as the "Plan Policies Report," and Volume II will be referred to as the "Technical Supplement."

Volume I, the Plan Policies Report, contains 35 policy areas relating to nine major topics: land use, open space, recreation and public facilities, circulation, scenic highways, housing, conservation, seismic safety and safety, and noise. Each of the nine major topics and the policy areas are preceded by references to other related plan policies, to relevant EIR sections, and to the sections of the Technical Supplement that contain the specific information on which the policies are based.

Volume II, the Technical Supplement, contains five major sections. The first, Population, Employment, and Housing Trends and Projections, includes basic data necessary for understanding many of the policies. The next three sections of the Technical Supplement are devoted to the three General Plan sections. Whenever appropriate, sections of the Technical Supplement are referenced to the policy areas of the Plan Policies Report that have been derived from the corresponding information. The last section of Volume II, the EIR on the General Plan, contains extensive references to the Plan Policies Report and the Technical Supplement, in order to not repeat and duplicate information found elsewhere in the two documents.

Much of the data in the Technical Supplement will need to be amended as conditions change and new information becomes available. While the adopted plan in the Plan Policies Report can be amended as often as three times each year (Gov. Code, Sec. 65361) and should be revised at least every five years, the changes will be less frequent than the data changes in the Technical Supplement. Both volumes are intended to be bound loose-leaf so that revisions can be inserted.

1.0. POPULATION, EMPLOYMENT, AND HOUSING: TRENDS AND PROJECTIONS

(See the Plan Policies Report, Section 1.5.)

This section presents the demographic information that forms the basis for many of the General Plan policies, particularly in the Land Use and Housing Elements.

1.1 PLANNING AREA BOUNDARIES

The City of Tracy is part of the Stockton Standard Metropolitan Statistical Area (SMSA), which encompasses all of San Joaquin County. San Joaquin County also constitutes the regional housing market area of which the City of Tracy is a part. For statistical purposes, the County Planning Department has divided the county into 11 "planning areas," one of which includes the incorporated City of Tracy, its unincorporated sphere of influence, and considerable surrounding territory (see Figures 1.1 and 1.2). For the purposes of this plan, the "Tracy planning area" means the area designated by San Joaquin County, while the "General Plan area" refers to the incorporated City of Tracy and its unincorporated sphere of influence.

1.2 POPULATION CHARACTERISTICS

(See the Plan Policies Report, Policy Area 1, and the Technical Supplement, Sections 1.3, 1.5, 1.6, and 2.1.)

San Joaquin County

Both San Joaquin County and the state as a whole experienced significant population growth over the 1960-80 period. Between 1960 and 1970, the state's population increased 26.9 percent, while that of the county increased 16.1 percent. This relationship was reversed between 1970 and 1980, when the state's population grew by 18.6 percent and the county's 19.7 percent. Overall growth for the 20-year period was 50.6 percent for the state and 28.9 percent for the county.

Subregional Relationships

The population of the Tracy planning area has grown by 34.4 percent since 1960, ranking it fourth among the 11 county planning areas in total growth over this period. Table 1.1 indicates that over the entire 1960-80 period, county population grew at an average annual rate of 1.6 percent, while the corresponding rate for the Tracy planning area was 1.5 percent. During the 1960's, annual growth rates were 1.5 percent for the county and 1.3 percent for the planning area. These rates increased over the 1970-80 period to 1.8 percent for the county and 1.7 percent for the planning area. The 1970-75 period was one of slow growth for both the county and the planning area, but both areas experienced substantially higher growth rates over the following five years.

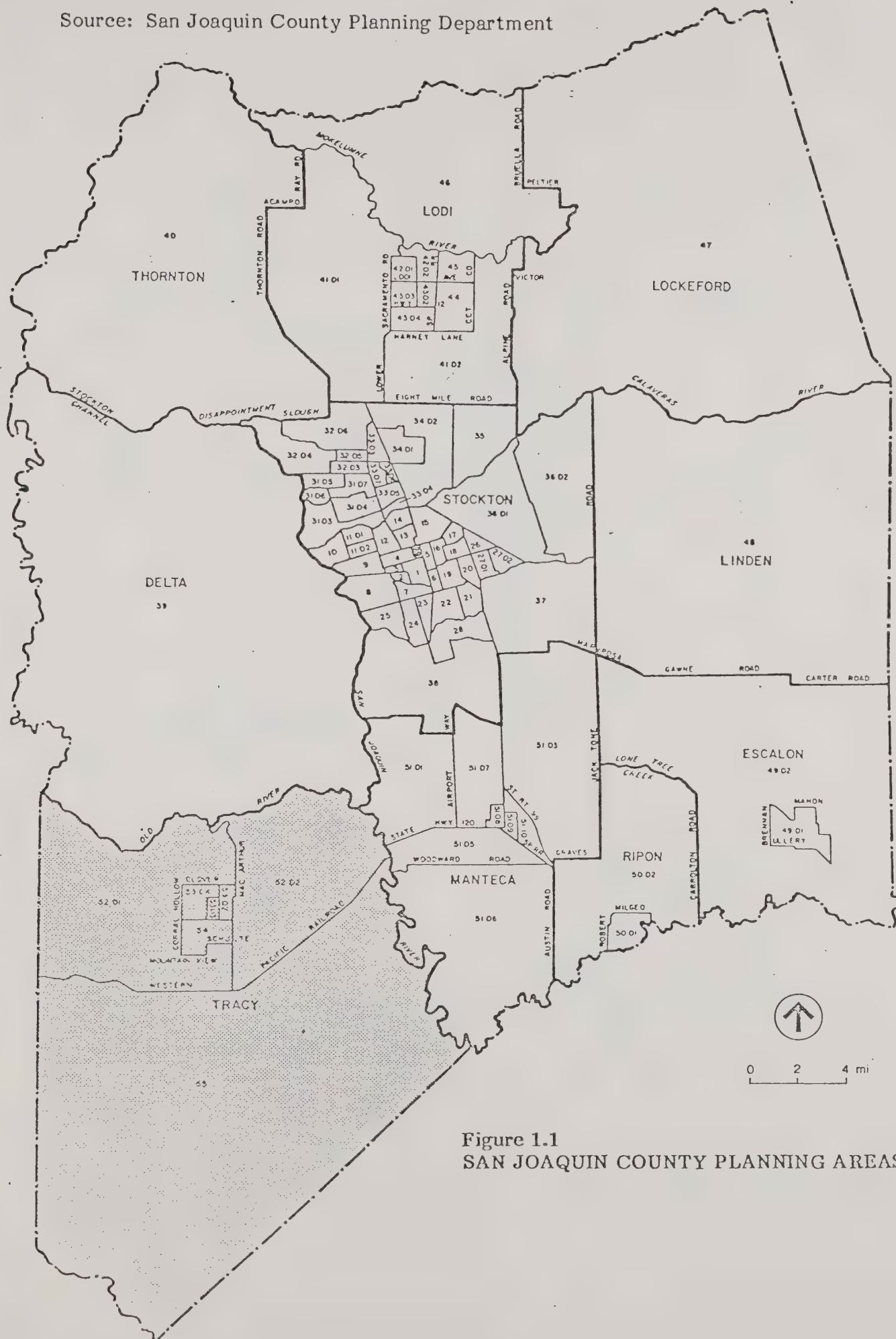


Figure 1.1
SAN JOAQUIN COUNTY PLANNING AREAS



TABLE 1.1
POPULATION GROWTH, SAN JOAQUIN COUNTY
AND TRACY PLANNING AREA: 1960-1980

	<u>Average Annual Growth Rates</u> <u>County</u>	<u>Planning Area</u>	<u>Planning Area Share</u> <u>of County Growth</u>
1960-1980	1.5%	1.3%	7.0%
1970-1980	1.8%	1.7%	7.0%
1970-1975	0.6%	0.4%	5.3%
1975-1980	3.0%	2.8%	7.3%
1960-1980	1.6%	1.5%	7.0%

The Tracy planning area's share of total countywide growth was remarkably constant over the 20-year period, holding steady at 7 percent. This share declined slightly during the 1970-75 period (to 5.3 percent), but rebounded over the following five-year period to 7.3 percent.

City of Tracy

Between 1960 and 1980, city population increased from 11,289 to 18,428--a total gain of 63.2 percent. Unincorporated portions of the planning area maintained a stable population of approximately 8,000 throughout the period (see Table 1.2). The "Cease and desist" order issued for Tracy's Sewage Treatment Plant by the Regional Water Quality Control Board in 1978 may have slowed growth near the end of the decade, although not all available sewer connection permits were used.

1.3 GROWTH PROJECTIONS

(See the Plan Policies Report, Policy Area 1, and the Technical Supplement, Sections 1.2, 1.5, 1.6, and 2.1.)

Long-range population projections are an essential part of the planning process, despite the risks of imprecision associated with the underlying assumptions. Such projections are especially important in planning for housing needs, since they constitute a basic determinant of the scale of those needs. The assumptions and projections presented in Table 1.2 are the result of a review of available data from state, county, and other sources, together with an assessment of the historical trends that influenced Tracy's growth.

The review of projection data from state, county, and other sources encompassed the following:

- California Department of Finance (DOF) projections, Series E-150 (1977) for the 1980-2000 period, including revised projections (1980) for the 1980-85 period;

- San Joaquin County Planning Department projections (1978) for the 1980-2000 period, including revised projections (1981) for the 1981-1986 period;
- Tracy General Plan projections (1959 and 1969) for the 1980-1990 period; and
- Projections made in the Environmental Impact Report (EIR) for the expansion of the Tracy Wastewater Treatment Plant (1980) for the 1985-2000 period.

These projections were based on varying assumptions, and as a result differ widely for various time periods. For example, the 1969 Tracy General Plan projects a 1990 planning area population of 68,345, while in 1978 the County Planning Department projected a year 2000 planning area population of 44,618.

The "high" range projections in Table 1.2 were used as the basis for the General Plan revision using the following assumptions:

- For the County - population growth will occur at an annual rate of 2.5 percent from 1980-1990, and 2.0 percent from 1990-2000.
- For the Planning Area - the area's share of countywide growth will increase to 10 percent of 1980-85 growth, 12 percent of 1980-90 growth, and 15 percent of 1990-2000 growth. The Carbona and Mountain View-Midway areas within Tracy's General Plan area will remain unincorporated rural residential areas, but will develop to the maximum permitted density. The balance of the General Plan area will remain available for future annexation and potential urban development. The rural unincorporated areas outside the General Plan area will add population at the rate of 1 percent per year.
- For the City - Non-rural planning area growth will occur within the General Plan area, will be directed to areas contiguous to the existing city limits, and will be annexed as it occurs.

These assumptions take into account Tracy's proximity to freeways and railroads; its large supply of open, developable land; its low land costs in relation to the Bay Area; and its excellent potential for attracting new industrial development. They are also predicated upon timely completion of needed improvements at the Tracy Wastewater Treatment Plant.

"Low" range population projections were also prepared, based on lower county growth rates and the allocation of smaller shares of countywide growth to Tracy. The resulting total, 29,200, is close to the figure used in the Wastewater Treatment Plant EIR (1980), and is as likely to prove accurate as the high projection. However, for planning purposes, it is prudent to use the high figure, even if it is not reached by the year 2000. Phasing policies can be used to avoid premature commitment to expansion of the urban area if the actual growth rate is slower than the plan assumes.

TABLE 1.2
TOTAL POPULATION, ACTUAL AND PROJECTED: 1960-2000^a

Tracy Planning Area ^b							Tracy City
<u>Year</u>	<u>San Joaquin County</u> <u>#</u>	<u>(%)</u>	<u>Total</u>	<u>Rural</u> <u>Unincor-</u> <u>porated</u> ^c	<u>Portion of</u> <u>Sphere of</u> <u>Influence</u> ^d	<u>Balance of</u> <u>Sphere of</u> <u>Influence</u> ^e	
1960	249,989	(100)	19,933 (8.0)	8,644	—	—	11,289 (4.5)
1970	290,208	(100)	22,818 (7.9)	8,094	—	—	14,724 (5.1)
1975	299,831	(100)	23,326 (7.8)	7,271	—	—	16,055 (5.4)
1980	347,342	(100)	26,798 (7.7)	6,325	495 ^f	1,550 ^f	18,428 (5.3)
1982	369,269						67,680 ← 1/83 40% of 1980
1985	393,000 ^g	(100)	31,400 (8.0) ^h	6,700 ⁱ	600 ^j	24,100 ^k	(6.1)
1990	444,600 ^g	(100)	37,600 (8.5) ^h	7,000 ⁱ	650 ^j	29,950 ^k	(6.8)
1995	490,900 ^g	(100)	44,500 (9.1) ^h	7,350 ⁱ	700 ^j	36,450 ^k	(7.5)
2000	542,000 ^g	(100)	52,200 (9.7) ^h	7,700 ⁱ	800 ^j	43,700 ^k	(8.0)

Sources: 1960-1980 data: U.S. census.

(See footnotes on the following page.)

FOOTNOTES TO TABLE 1.2

^aAll projections rounded.

^bPlanning area as defined by San Joaquin County. Includes Census Tracts 52.01, 52.02, 53.02, 53.03, 53.04, 54, and 55.

^cIncludes all of Tracy planning area outside Tracy's adopted sphere of influence.

^dConsists of the rural residential areas of Carbona and Mountain View-Midway.

^eAssumed available for urban development.

^fBlayney-Dyett estimates based on housing unit count (total: 644 standard units, 85 mobile homes); assumes 2.80 persons per household.

^gBlayney-Dyett projection: Assumes a 2.5% annual growth rate from 1980-1990 and a 2.0% annual growth rate from 1990-2000.

^hBlayney-Dyett projection: Assumes an increasing share of countywide growth will occur in the planning area. Planning area share is 10% of 1980-1985 countywide increase, 12% of 1985-1990 increase; and 15% of 1990-2000 increase.

ⁱBlayney-Dyett projection: Assumes a 1% annual growth rate in rural unincorporated sections of Tracy planning area.

^jBlayney-Dyett projection: Assumes that rural residential areas of Carbona and Mountain View-Midway will not be annexed during the planning period. Carbona is assumed to develop to maximum permitted density. Also assumes all existing vacant lots in Mountain View-Midway will be developed. Total growth projected at 280 persons (100 housing units), distributed equally over planning period.

^kBlayney-Dyett projection: Assumes that development within the balance of Tracy's sphere of influence will be contiguous to the existing city limits and annexed as it occurs. Existing population within the balance of the sphere of influence is held constant after 1980 (i.e., population increases will result only from new residential development, which will be annexed as it occurs).

1.4 AGE DISTRIBUTION

(See the Plan Policies Report, Policy Area 21, and the Technical Supplement, Sections 1.6, 3.2.2, and 3.5.4.)

Over the past 20 years, the nation has experienced significant demographic changes that will influence the future composition of Tracy's population. A sharp decline in the birth rate has resulted in a generally older population, with smaller family sizes, even in areas of rapid population growth where most new housing units are occupied by working age families. Table 1.3 reveals the impact of these trends on Tracy, where the proportion of the population under age 20 declined from 40 to 34 percent between 1960 and 1975, while the proportion over age 65 increased from 7 to 9 percent. Over the same period, the "working age" population (20 to 64) increased from 52 percent to nearly 57 percent.

TABLE 1.3
AGE DISTRIBUTION, 1960-1975

	San Joaquin County		Tracy Planning Area		Tracy City	
	<u>#</u>	<u>(%)</u>	<u>#</u>	<u>(%)</u>	<u>#</u>	<u>(%)</u>
1960						
0-19	9,493	(38.0)	8,129	(40.8)	4,556	(40.4)
20-64	130,936	(52.4)	10,389	(52.1)	5,819	(51.5)
65+	24,116	(9.6)	1,415	(7.1)	914	(8.1)
Total	249,989	(100.0)	19,933	(100.0)	11,289	(100.0)
1970						
0-19	109,869	(37.9)	8,960	(39.3)	5,685	(38.6)
20-64	150,553	(51.9)	11,728	(51.4)	7,624	(51.8)
65+	29,676	(10.2)	2,130	(9.3)	1,415	(9.6)
Total	290,208	(100.0)	22,818	(100.0)	14,724	(100.0)
1975						
0-19	104,091	(34.6)	7,968	(34.2)	n.a.	
20-64	164,304	(54.9)	13,188	(56.5)	n.a.	
65+	31,436	(10.5)	2,170	(9.3)	n.a.	
TOTAL	299,831	(100.0)	23,326	(100.0)	18,428	

Source: U.S. census.

The DOF E-150 projections for San Joaquin County include age distribution, and similar projections by the County Planning Department include age distribution by planning area. Barring further dramatic changes in birth rates, these may be considered the best available projections of age distribution, though they do not incorporate 1980 census results.

The projections of age distribution for the Tracy planning area presented in Table 1.3 assume that the planning area's characteristics gradually move toward countywide age patterns projected by the Department of Finance, and are adjusted for the influence of Deuel Vocational Institute's 1,600 inmates

(whose median age is 23.8 years). As Table 1.4 indicates, by the year 2000, the under 20 age group is expected to represent about 32 percent of the population, ages 20-64 will account for about 58 percent, and the over 65 group will comprise about 11 percent. These projections are intended only to provide a general indication of age group trends and to provide estimates of the number of persons in age groups that most directly affect city policy. For example, the number of school-age children will have a direct impact on the demand for educational services, while the number of elderly persons will affect the demand for senior citizen housing.

TABLE 1.4
PROJECTED AGE DISTRIBUTIONS
TRACY PLANNING AREA: 1980-2000

	0-19		19-64		65+		Total	
	#	(%)	#	(%)	#	(%)	#	(%)
1975a	7,968	(34.2)	13,188	(56.5)	2,170	(9.3)	23,326	(100)
1980b	8,870	(33.1)	15,220	(56.8)	2,708	(10.1)	26,798	(100)
1985c	9,950	(31.7)	18,150	(57.8)	3,300	(10.5)	31,400	(100)
1990c	12,100	(32.1)	21,450	(57.0)	4,100	(10.9)	37,600	(100)
1995c	14,250	(32.0)	25,350	(57.0)	4,900	(11.0)	44,500	(100)
2000c	16,550	(31.7)	30,150	(57.8)	5,500	(10.5)	52,200	(100)

Sources:

^aSan Joaquin County Planning Department.

^bBlayney-Dyett projection: estimated from available data provided by San Joaquin County and California Department of Finance.

^cBlayney-Dyett projections: assumes planning area moves toward countywide age distribution projected in DOF Series E-150, adjusted for impact of Deuel Vocational Institute population.

Ethnic Distribution

Table 1.5 shows the current ethnic distribution of the population in the county, the Tracy planning area, and the City of Tracy. Historical data from the 1960 and 1970 censuses are also shown, but for illustrative purposes only. The ethnic distributions from 1960 and 1970 are not directly comparable with 1980 data, due to changes in the way the Hispanic population is counted. In 1960 and 1970, persons with "Spanish surnames" (regardless of race) were recorded, while 1980 data identify persons of "Spanish origin" (regardless of race).

1.5 EMPLOYMENT CHARACTERISTICS

(See the Plan Policies Report, Policy Area 1.) :

The Tracy area's employed population currently is about 10,800 persons, while the number of jobs available on an annual average basis is 12,740 (see Table 1.6). Thus, the net in-commute into Tracy totals about 2,000 workers. Total in-commute and out-commute (Tracy residents employed outside the planning area) is much greater. While recent specific data are not available, it is likely that the order of magnitude of out-commute is above 1,000, with total in-commute to Tracy area jobs being above 3,000.¹

San Joaquin County's labor force constitutes 48 percent of the population, with an average unemployment rate of about 9 percent. Monthly labor force and employment estimates vary significantly due to the seasonal nature of the agriculture and food processing industries. Both labor force and employment peak in August and September, with 10,000-15,000 more jobs than the annual average, and the unemployment rate typically drops to 6 to 8 percent. For simplicity, only annual averages are used here.

Employment data and projections from the State Employment Development Department (EDD) and San Joaquin County Planning Department were reviewed to develop estimates of current employment in the planning area and to project its future employed population (persons employed, by residence location) and future employment (jobs, by location). Employment data from the 1980 census, which will include information on the location of jobs held by Tracy area residents, are not yet available, but information from major employers in the Tracy area and in Livermore was used to develop estimates of residence location and employment trends.

Tracy's employment base, excluding the largely residential serving categories, such as retailing and schools, has three major components: government employment at the Defense Depot of Tracy (DDT), with some 1,600 jobs, and employment at the state's Deuel Vocational Institution (DVI), with about 600 positions, form one component. Both of these facilities draw employees from a broad area, with only about 25 to 30 percent of the employees reported as Tracy residents. Manufacturing and distribution activities, predominantly based on agricultural or natural resources products, are the second major component. The Tracy area provides about 12 percent of the county's jobs in food products manufacturing and about 6 percent of other manufacturing jobs. However, the city's industrial base has diversified in recent years. Survey responses from 14 major industrial employers (representing about 2,200 employees) indicate that nearly three-fourths of the jobs are held by Tracy residents. Agriculture comprises the third segment; although average agricultural employment is projected to decline, it will remain a significant contributor to the community's economic base. Tracy now accounts for about 2,800 agricultural jobs, representing 14 percent of the county's agricultural employment.

¹For example, 411 Tracy residents now commute out to the Lawrence Livermore Laboratory (5.6 percent of its work force), up from 250 in 1975.

TABLE 1.5
ETHNIC DISTRIBUTIONS: 1960-1980

	San Joaquin County		Tracy Planning Area		Tracy City	
	<u>#</u>	<u>(%)</u>	<u>#</u>	<u>(%)</u>	<u>#</u>	<u>(%)</u>
<u>1960</u>						
White	225,242	(90.1)	18,867	(94.7)	10,980	(97.3)
Black	11,684	(4.7)	618	(3.1)	203	(1.8)
Other ^a	13,063	(5.2)	448	(2.2)	106	(0.9)
Total	249,989	(100.0)	19,933	(100.0)	11,289	(100.0)
Spanish Surname ^b	30,585	(12.2)	4,043	(20.3)	n.a.	
<u>1970</u>						
White	255,621	(88.1)	20,697	(95.3)	14,213	(96.5)
Black	15,783	(5.4)	502	(2.3)	257	(1.8)
Other ^a	18,804	(6.5)	529	(2.4)	254	(1.7)
Total	290,208	(100.0)	21,728	(100.0)	14,274	(100.0)
Spanish Surname ^b	52,280	(18.0)	5,788	(26.7)	n.a.	
<u>1975</u>						
White	271,284	(90.5)	22,085	(94.7)	15,557	(96.9)
Black	16,270	(5.4)	978	(4.2)	315	(2.0)
Other ^a	12,277	(4.1)	263	(1.1)	183	(1.1)
Total	299,831	(100.0)	23,326	(100.0)	16,055	(100.0)
Spanish Surname ^b	n.a.		n.a.		n.a.	
<u>1980</u>						
White	264,039	(76.0)	21,608	(80.6)	15,007	(81.4)
Black	19,175	(5.5)	849	(3.2)	309	(1.7)
Asian ^c	19,888	(5.7)	382	(1.4)	197	(1.6)
Native American ^d	3,457	(1.0)	323	(1.2)	235	(1.3)
Other ^a	40,783	(11.8)	3,636	(13.6)	2,580	(14.0)
Total	347,342	(100.0)	26,798	(100.0)	18,428	(100.0)
Spanish Origin ^b	66,565	(19.2)	6,835	(25.5)	4,889	(26.5)

^aIncludes Asians, Native Americans, Pacific Islanders, and others.

^bRegardless of race.

^cIncludes Pacific Islanders.

^dIncludes Eskimos and Aleuts.

Source: U.S. census.

Wholesale and retail trade, finance and real estate, service employment, and government (excluding DVI and DDT) employment categories are largely residential serving and relate more closely to resident population than do industrial classifications. In 1980, these groups were estimated to include almost 5,000 jobs, or about 65 percent of the planning area's non-agricultural employment. Tracy's share of countywide employment in these categories now is about 7 percent, slightly less than the planning area's share of countywide population. This probably reflects the greater importance of Stockton in meeting some of the area's finance and service needs.

Employment projections for the planning area, prepared by San Joaquin County, and partly reflecting local land use and land availability, anticipate a continuing high proportion of jobs in food products manufacture and a moderate increase in the share of other manufacturing jobs. Other classifications are expected to retain current shares, with slight increases in finance and service employment shares.

Table 1.6 shows the changes in labor force, employed population, and employment by job location for 1960-80, and projections for 1985-2000, for San Joaquin County and the Tracy planning area. For the employed population projections, the planning area is assumed to have a labor force participation rate comparable to the county, with an average annual unemployment rate of 10 percent. The current ratio of employment to countywide employed population is assumed to continue; the variance reflects differences in reporting of jobs and employment in available statistical data. The projections assume a net countywide out-commute of 5,000 workers by the year 2000.

In the Tracy planning area, employment is estimated to increase by between 12 percent and 24 percent within the next 10 years and by 20 percent over the following decade. Employment growth in the county is expected to be greater than Tracy's in the 1980's (27 percent), but will be comparable to the city's during the following 10 years.

Table 1.7 presents employment projections for the county and the planning area for 1990 and 2000, by employment classifications currently used in EDD reports. Countywide employment by classification reflects a composite of varying projections for 1985, 1990, and 2000 prepared by EDD, the County Planning Department, and Stanford Research Institute.² The planning area projections are not based on detailed analysis of potential growth in each classification, but instead assume the planning area will continue to represent shares of countywide employment comparable to current patterns, with modest increases in resident-serving classifications. In the Tracy planning area, the largest employment increases are projected to occur in the construction, manufacturing (other than food), and services categories.

²Stanford Research Institute, 1973 (February). Interim Report - Task B, Projections of the Economy in San Joaquin County.

TABLE 1.6
LABOR FORCE, EMPLOYED POPULATION, AND
EMPLOYMENT: 1960-1980, WITH PROJECTIONS TO 2000

	San Joaquin County					Tracy Planning Area ^d				
	Population ^a	Labor Force ^a	Participation Rate	Employed Population ^a	Employment ^a	Population ^a	Labor Force ^a	Participation Rate	Employed Population ^a	Employment ^a
1960	249,989	98,900	.39	90,700	—	19,933	7,200	.36	6,600	—
1970	290,208	123,600	.43	113,300	—	21,728	8,700	.40	8,000	—
1975	299,831	143,500	.48	128,100	121,500	23,326	10,400	.45	9,300	11,810
1979	337,815	161,700	.48	145,800	137,400	26,219	11,800	.45	10,700	—
1980 ^b	347,312	165,400	.48	146,500	138,100	26,942	12,200	.45	10,800	12,740
Projections ^c										
1985	393,000	188,600	.48	169,800	—	31,400	14,300	.45	12,900	—
1990	444,600	209,000	.47	188,100	176,700	37,600	16,900	.45	15,200	15,900
1995	490,900	230,700	.47	207,700	—	44,500	20,200	.45	18,200	—
2000	542,000	254,700	.47	229,300	212,800	52,200	23,800	.45	21,400	19,500

Population, Labor Force, and Employed Population by residence location; Employment by job location. Data from EDD reports.

County data from EDD forecasts of May 1980.

County Projections: Employed population assumed at 90 percent of labor force, 1985-2000.
Employment for 75-79-80 is annual average per EDD.

Tracy: 1960-80 labor force assumed at same participation rate as county, applied to population excluding assumed constant 1,600 DVI inmates. Labor force projections on same basis.
Employed population assumed at 90 percent of labor force, 1985-2000.
Employment for 1975-79-80 derived from EDD data, adjusted per County Planning Department data for 1975 and 1985 (proj.) to be comparable with EDD annual data.

Source: Blayney-Dyett.

TABLE 1.7
EMPLOYMENT BY INDUSTRY: 1975 AND
1980, WITH PROJECTIONS FOR 1990 AND 2000

	1975		1980		1990		2000	
	San Joaquin County	Tracy Planning Area	San Joaquin County	Tracy Planning Area	San Joaquin County	Tracy Planning Area	San Joaquin County	Tracy Planning Area
Mining	100	—	100	—	200	—	200	—
Construction	3,800	130	6,000	180	8,700	500	11,300	1,000
Manufacturing (Food)	9,100	1,100	8,700	1,050	11,000	1,300	12,900	1,500
Manufacturing (Other)	10,300	650	12,400	750	20,100	1,200	33,300	2,000
Transportation and Utilities	7,200	620	8,500	760	11,400	1,000	13,900	1,200
Wholesale Trade	6,000	300	7,200	360	9,800	600	12,100	700
Retail Trade	16,700	1,090	20,100	1,400	6,800	2,100	31,200	2,500
Finance, Insurance, and Real Estate	3,900	140	4,700	190	6,600	300	8,300	500
Services	17,800	740	23,400	940	31,700	1,600	37,200	2,600
Government	26,100	4,160	26,900	4,300	34,400	5,100	38,400	5,500
Total Non-Agricultural	101,000	8,930	118,000	9,930	160,700	13,700	198,800	17,500
Agriculture	20,500	2,880	20,100	2,810	16,000	2,200	14,000	2,000
Total Employment	121,500	11,810	138,100	12,740	176,700	15,900	212,800	19,500

1.6 HOUSEHOLD CHARACTERISTICS

(See the Plan Policies Report, Policy Areas 1 and 21, and the Technical Supplement, Section 3.2.2 and 3.5.4.)

Household Population

Table 1.8 presents data on household population for San Joaquin County, the Tracy planning area, and the City of Tracy during the 1960-80 period. Average household sizes in all three areas decline significantly, with the city's average household size declining from 3.23 persons in 1960 to 2.76 persons in 1980. Non-household population in the City of Tracy has remained stable at relatively low levels, and consists primarily of nursing home residents.

Household Composition

Data on the composition of households for the county, the planning area, and the city are presented in Table 1.9. Although data are available only for the years 1960 and 1970, several significant trends are evident in all three areas:

- The number of households consisting of "primary individuals" (i.e., single persons) has increased. In the City of Tracy, this type of household comprised 16.9 percent of all households in 1960, and 20.5 percent of all households in 1970.
- The number of "husband-wife" households has declined. In the City of Tracy, this type of household constituted 74.7 percent of all households in 1960, decreasing to 70.4 percent in 1970.
- The number of single parent households has increased, with the city's proportion of such households climbing from 8.4 to 9.1 percent in 1970.

These trends probably have continued since 1970 and are representative of nationwide changes in household composition over the past two decades. More young and elderly persons have established separate households and there has been an increase in the number of divorced persons living alone. All the above trends were more pronounced for the county as a whole than for the planning area or the City of Tracy. This reflects the geographic distribution of primary individual and single-parent households, which appear to locate in other areas of the county--particularly the Stockton area.

Family Income

Table 1.10 presents 1970 income data for San Joaquin County and the City of Tracy. The distributions suggest that Tracy is a middle income community, with more than 80 percent of the families having 1970¹ incomes of less than \$15,000. Detailed data on 1980 income are not yet available; however, the U.S. Department of Housing and Urban Development has estimated the 1980 median family income for San Joaquin County at \$24,200. Assuming that the 1970 relationship between county and city median incomes has remained constant through 1980, the city's median family income is now approximately \$24,410.

TABLE 1.8
HOUSEHOLD CHARACTERISTICS

	<u>San Joaquin County</u>	<u>Tracy Planning Area</u>	<u>Tracy City</u>
<u>1960</u>			
Total Population	249,989	19,933	11,289
Non-Household	15,031	1,945 ^a	5
Household	234,958	17,988	11,284
Total Households	74,657	5,409	3,493
Average Household Size	3.15	3.33	3.23
<u>1970</u>			
Total Population	290,208	22,818	14,724
Non-Household	10,653	1,663 ^b	97
Household	279,555	21,155	14,627
Total Households	92,372	6,715	4,827
Average Household Size	3.03	3.15	3.03
<u>1975</u>			
Total Population	299,831	23,326	16,055
Non-Household	10,394	1,534 ^c	110
Household	289,437	21,792	15,945
Total Households	104,719	7,689	5,751
Average Household Size	2.83	2.76	2.77
<u>1980</u>			
Total Population	347,342	26,798	18,428
Non-Household	9,364	1,407 ^d	75
Household	337,978	25,391	18,353
Total Households	124,043	9,073	6,657
Average Household Size	2.74	2.80	2.76

^aIncludes 1,595 DVI inmates.

^bIncludes 1,509 DVI inmates.

^cIncludes 1,407 DVI inmates.

^dNo inmate data available.

Sources: 1960, 1970, 1975 data: U.S. census.

1980 data: U.S. census (non-household population and total households are preliminary data).

TABLE 1.9
HOUSEHOLD COMPOSITION: 1960-1970

	San Joaquin County		Tracy Planning Area		Tracy City	
	<u>#</u>	<u>(%)^a</u>	<u>#</u>	<u>(%)^a</u>	<u>#</u>	<u>(%)^a</u>
<u>1960</u>						
Primary Individuals	14,496	(19.4)	858	(15.9)	591	(16.9)
Husband-Wife Families	53,353	(71.5)	4,133	(76.4)	2,608	(74.7)
Single Parent Families	6,808	(9.1)	418	(7.7)	294	(8.4)
Total Households	74,657	(100.0)	5,409	(100.0)	3,493	(100.0)
<u>1970</u>						
Primary Individuals	19,956	(21.3)	1,247	(18.6)	989	(20.5)
Husband-Wife Families	62,934	(68.1)	4,885	(72.8)	3,399	(70.4)
Single Parent Families	9,782		583		439	
Female Head	7,777	(8.4)	452	(6.7)	358	(7.4)
Male Head	2,005	(2.2)	131	(1.9)	81	(1.7)
Total Households	92,372	(100.0)	6,715	(100.0)	4,827	(100.0)

^aOf all households.

Source: U.S. census.

TABLE 1.10
INCOME OF FAMILIES AND
UNRELATED INDIVIDUALS: 1970

	San Joaquin County		Tracy City	
	<u>#</u>	<u>(%)</u>	<u>#</u>	<u>(%)</u>
<u>1970</u>				
Total Households	92,372		4,827	
Total Families	73,264	(100.0)	3,835	(100.0)
Annual Income				
0-2,999	7,682	(10.5)	327	(8.5)
3,000-5,999	11,561	(15.8)	515	(13.4)
6,000-8,999	14,268	(19.5)	815	(21.2)
9,000-11,999	15,337	(20.9)	816	(21.3)
12,000-14,999	10,468	(14.3)	582	(15.2)
15,000-24,999	10,929	(14.9)	682	(17.8)
25,000-49-999	2,563	(3.5)	98	(2.6)
50,000+	456	(0.6)	0	
Median Income	\$9,602		\$9,865	

Source: U.S. census.

1.7 HOUSING CHARACTERISTICS

(See the Plan Policies Report, Policy Areas 17, 19, and 20, and the Technical Supplement, Sections 3.2.1, 3.2.3, 3.2.4, 3.3.1, 3.3.2, 3.5.3, and 3.5.4.)

Structure Types

Twenty years ago, nearly 92 percent of Tracy's dwellings were single-family homes. During the 1960's, there was a spurt in construction of multi-family dwellings, including assisted housing, and by 1970 one out of every five units was a multi-family dwelling. However, construction of multi-family dwellings slowed substantially over the past decade, and current data indicate that multi-family units have declined slightly as a percentage of the total. U.S. census data also indicate that the percentage of owner-occupied, single-family units in Tracy increased between 1960 and 1970, which probably can be attributed to the favorable conditions for home purchase that prevailed through this period. In comparison, the county as a whole has a larger proportion of multi-family units in its housing stock, although this can be accounted for by the large number of multi-family units in the Stockton area. Single-family, owner-occupied rates for the county as a whole also increased during the 1960-70 period, though not as sharply as in Tracy.

Table 1.11 presents more detailed data, showing units per residential structure for the county, the Tracy planning area, and the City of Tracy. Although 1980 census data are not yet available, 1960-70 data illustrate the growth in multi-family structures and reveals a substantial increase in the numbers of mobile homes in all areas. California Department of Finance (DOF) 1980 data on units per structure for the City of Tracy show a decrease in the share of multi-family structures in the city, with the sharpest decline occurring in structures containing more than five units. The mobile home segment of the city's housing stock continued to grow over the past 10 years, increasing from 2.0 percent of the total in 1970 to 4.3 percent of the total in 1980.

Tables 1.12 and 1.13 present detailed data on building activity in the Tracy planning area and the City of Tracy for the 1970-81 period. Table 1.12 shows that nearly all the multi-family units authorized in the planning area were in Tracy, with 65 percent of this activity taking place prior to 1976. Table 1.13 lists the actual number of housing units completed in Tracy over the 1970-80 period, with the years 1973, 1976, 1979, and 1980 having the most completed units. Over the entire 1970-80 time period, 343 housing units for which city building permits were issued were not completed. Thus the completion rate for approved units over the 10-year period was 85.5 percent.

Tenure and Vacancy

Table 1.14 presents tenure and vacancy data for San Joaquin County for the 1960-80 period. The percentage of owner-occupied housing units declined between 1960 and 1970 in both the county and the city. However, this trend did not hold up for the Tracy planning area, which experienced an increase in total owner-occupied units. This deviation from county and city trends can be explained by the much higher rate of single-family building activity in rural portions of the planning area. Census data for 1980, when they become available, should provide a clearer picture of how the construction cost and interest rate changes of the last few years have affected housing tenure.

TABLE 1.11
UNITS PER STRUCTURE: 1960-1980

	<u>Tracy Planning Area</u>		<u>Tracy City</u>	
	<u>#</u>	<u>(%)</u>	<u>#</u>	<u>(%)</u>
1960				
1	5,634	(93.6)	3,398	(90.4)
2-4	215	(3.5)	196	(5.2)
5+	142	(2.4)	137	(3.6)
MH	30	(0.5)	29	(0.8)
Total	6,021	(100.0)	3,760	(100.0)
1970				
1	5,893	(82.1)	3,854	(76.0)
2-4	612	(8.5)	586	(11.6)
5+	594	(8.3)	528	(10.4)
MH	79	(1.1)	100	(2.0)
Total	7,178	(100.0)	5,068	(100.0)
1980				
1	NA		5,412	(75.7)
2-4	NA		817	(11.4)
5+	NA		618	(8.6)
MH	NA		306	(4.3)
Total	9,911	(100.0)	7,153	(100.0)

Sources: 1960-1970: U.S. census.
1960-1970, 1980 Total Unit Count: U.S. census.
1980 units per structure data: California DOF.

TABLE 1.12
RESIDENTIAL BUILDING PERMITS: 1970-1980

Calendar Year	Tracy Planning Area ^a			Tracy City					
	Single Family # (%) ^b	Multiple Family # (%) ^c	Total # (%) ^d	Single Family # (%) ^b	Multiple Family # (%) ^c	Total # (%) ^d	Single Family # (%) ^b	Multiple Family # (%) ^c	Total # (%) ^d
1970	22 (0.9)	8 (1.0)	30 (0.9)	42 (1.7)	34 (4.1)	76 (2.4)	42 (1.7)	34 (4.1)	76 (2.4)
1971	41 (1.7)	2 (0.2)	43 (1.3)	36 (1.5)	78 (9.4)	114 (3.5)	36 (1.5)	78 (9.4)	114 (3.5)
1972	165 (6.8)	0 (0.0) ^e	165 (5.1)	160 (6.6)	301 (36.3) ^e	461 (14.2)	160 (6.6)	301 (36.3) ^e	461 (14.2)
1973	100 (4.1)	1 (0.1)	101 (3.1)	94 (3.9)	101 (12.2)	195 (6.0)	94 (3.9)	101 (12.2)	195 (6.0)
1974	77 (3.2)	0 (0.0)	77 (2.4)	67 (2.8)	31 (3.7)	98 (3.0)	67 (2.8)	31 (3.7)	98 (3.0)
1975	52 (2.2) ^e	0 (0.0)	52 (1.6)	73 (3.0) ^e	0 (0.0)	73 (2.3)	73 (3.0) ^e	0 (0.0)	73 (2.3)
1976	72 (3.0)	0 (0.0)	72 (2.2)	144 (6.0)	8 (1.0)	152 (4.7)	144 (6.0)	8 (1.0)	152 (4.7)
1977	98 (4.1)	0 (0.0) ^e	98 (3.0)	273 (11.3)	22 (2.6) ^e	295 (9.1)	273 (11.3)	22 (2.6) ^e	295 (9.1)
1978	103 (4.3)	0 (0.0) ^e	103 (3.2)	215 (8.9)	82 (9.9) ^e	297 (9.2)	215 (8.9)	82 (9.9) ^e	297 (9.2)
1979	93 (3.9)	0 (0.0) ^e	93 (2.9)	254 (10.6)	68 (8.2) ^e	322 (9.9)	254 (10.6)	68 (8.2) ^e	322 (9.9)
1980	36 (1.5)	2 (0.2)	38 (1.2)	192 (8.0)	92 (11.1)	284 (8.8)	192 (8.0)	92 (11.1)	284 (8.8)
1981 ^f	n.a.	n.a.	n.a.	129 ^f 149	4 ^f 10	133 ^f 159	129 ^f 149	4 ^f 10	133 ^f 159
				110	8	118	110	8	118
1970-75	457	11	468	472	545	1,017	472	545	1,017
1975-80	402	2	404	1,078	272	1,350	1,078	272	1,350
1970-80	859 (35.7)	13 (1.5)	872 (26.9)	1,550 (64.3)	817 (98.5)	2,367 (73.1)	1,550 (64.3)	817 (98.5)	2,367 (73.1)
1970-81 ^g	n.a.	n.a.	n.a.	1,679	821	2,500	1,679	821	2,500

Grand Total - Tracy planning area and Tracy City, 1970-80: 3,239 housing units.

^aExcluding Tracy City.

^bPercentage of all single-family activity in Tracy planning area from 1970-1980.

^cPercentage of all multiple-family activity in Tracy planning area from 1970-1980.

^dPercentage of all residential activity in Tracy planning area from 1970-1980.

^eWhere there were reporting conflicts between county and city data for projects within Tracy, City data was assumed to be correct.

^fPlanning area data for 1981 are not available. Tracy data for this year are not a component of percentage calculations.

^gThrough September 30.

Sources: San Joaquin County Planning Department, Tracy Building Department.

TABLE 1.13
COMPLETED HOUSING UNITS: 1970-81

Year	Single Family		Multiple Family		Totals ^a	
	Completed	Demolished	Completed	Demolished	#	(%) ^b
1970 ^c	29	13	14	0	30	(1.4)
1971	60	27	58	0	91	(4.3)
1972	47	10	181	0	218	(10.2)
1973	88	4	270	40	314	(14.7)
1974	91	0	8	0	99	(4.6)
1975	77	10	2	6	63	(3.0)
1976	110	5	2	2	105	(4.9)
1977	219	5	14	0	228	(10.7)
1978	92	2	16	0	106	(5.0)
1979	305	0	87	0	392	(18.4)
1980 ^d	66	0	24	0	90	(4.2)
Subtotals ^d	1,184	76	676	48	1,736	(81.4)
1980 (balance)	249	2	41	0	288	(13.5)
1981 ^e	73	0	36	0	109	(5.1)
Grand Total 1970-1981	1,257	78	723	48	2,133	(100.0)

^aNet increase.

^bPercentage of total net increase: 1970-1981

^cAfter March 31, 1970.

^dThrough March 31, 1980.

^eThrough September 30, 1981.

Source: Tracy Building Department.

TABLE 1.14
TENURE AND VACANCY: 1960-1980

	San Joaquin County		Tracy Planning Area		Tracy City	
	#	(%)	#	(%)	#	(%)
<u>1960</u>						
Owner Occupied	47,475	(58.8)	3,224	(53.6)	2,178	(57.9)
Vacant for Sale	766	(1.0)	23	(0.4)	17	(0.5)
Renter Occupied	27,182	(33.7)	2,185	(36.3)	1,315	(35.0)
Vacant for Rent	2,171	(2.7)	237	(3.9)	162	(4.3)
Other Vacant ^a	3,101	(3.8)	352	(5.8)	88	(2.3)
Total Occupied Units	74,657		5,409		3,493	
Total Housing Units	80,695	(100.0)	6,021	(100.0)	3,760	(100.0)
<u>1970</u>						
Owner Occupied	56,720	(58.7)	4,037	(56.3)	2,834	(55.9)
Vacant for Sale	431	(0.5)	50	(0.7)	43	(0.9)
Renter Occupied	35,652	(36.9)	2,678	(37.3)	1,993	(39.3)
Vacant for Rent	2,216	(2.3)	160	(2.2)	137	(2.7)
Other Vacant ^a	1,544	(1.6)	253	(3.5)	61	(1.2)
Total Occupied Units	92,372		6,715		4,827	
Total Housing Units	96,563	(100.0)	7,178	(100.0)	5,068	(100.0)
<u>1980</u>						
Owner Occupied	n.a.		n.a.		n.a.	
Vacant for Sale	n.a.		n.a.		n.a.	
Renter Occupied	n.a.		n.a.		n.a.	
Vacant for Rent	n.a.		n.a.		n.a.	
Other Vacant ^a	n.a.		n.a.		n.a.	
Total Occupied Units	124,043		9,073		6,657	
Total Housing Units	136,001	(100.0)	9,911	(100.0)	7,153	(100.0)
Overall						
Vacancy	11,958	(8.8) ^b	838	(8.5) ^b	496	(6.9) ^b
					159	(2.2) ^c

^a"Other vacant" includes units sold or rented but not yet occupied, units held for the occasional use of the owner, and units being held off the market for other reasons.

^bSan Joaquin County estimate based on preliminary 1980 census data.

^cEstimates based on 1980 Postal Vacancy Survey.

Sources: 1960-1970 data: U.S. census.
1980 data: U.S. census (preliminary data).

The housing unit vacancy data presented in Table 1.14 reveal several interesting patterns:

- Vacancy rates for owner-occupied units tended to be extremely low (not exceeding 1 percent) for all areas over the 1960-70 period.
- Overall housing unit vacancy rates declined for all areas over the 1960-70 period, with the Tracy planning area showing the smallest overall decrease.
- The proportion of "other vacant" units declined for all areas over the 1960-70 period, suggesting an increase in the demand for year round housing units.

Only limited vacancy data were available for 1980. The county and planning area data are based on preliminary 1980 census results as reported by the County Planning Department. The vacancy estimate for the City of Tracy was based on the results of a Postal Vacancy Survey conducted at the same time as the 1980 census. The overall vacancy rate reported for the city by preliminary 1980 census reports was 6.9 percent but this figure is not consistent with information supplied by local realtors during preparation of this plan.³ The final results of the 1980 census should resolve questions concerning the current city vacancy rate. However, it should be noted that the city, in general, has had lower overall vacancy rates than either the county or the planning area over the past 20 years.

Value and Rent

A significant contributing factor to the low vacancy rates discussed above is the availability of lower priced housing in a community that is within acceptable driving distance of major employment centers in four counties: San Joaquin, Alameda, Contra Costa, and Stanislaus, and has more jobs than employed residents. The price of new housing in the Central Valley has risen at approximately the same rate as other commodities, while housing prices in the Bay Area have escalated much more rapidly. This can be attributed to a strong demand for housing in the Bay Area, a perceived shortage of residential land, and the no growth or slow growth policies of many Bay Area cities. In 1980, when the statewide median sales price of a single-family home was \$103,000 and the Bay Area Median was \$107,000, homes in the Central Valley were about \$40,000 cheaper (median of \$65,000). In Tracy, the average sales price was \$72,400 (median price not available). By way of contract the median 1970 value of a single-family home in Tracy was \$16,800.⁴ While 1970 value and 1980 sales price data for Tracy homes are not statistically comparable, the magnitude of the difference is notable.

³Confirmed in a 1979 survey conducted by the California Association of Realtors, which reported vacancy rates of less than 1 percent for single-family units and 3.5 percent for multi-family units in the Tracy area.

⁴The 1970 average value of Tracy homes was somewhat less than \$16,800, since mean values are less than median values in a left-skewed distribution.

Rents in the City of Tracy have undergone an equally dramatic increase over the past 10 years. The 1970 census recorded a median contract rent of \$83 per month for all renter-occupied units. At the same time, 61 percent of the rental units in the city had monthly rents of less than \$100. To update these figures, a survey of units available for rent in Tracy was conducted between September 15 and October 16, 1981. The survey included both single- and multi-family units offered for rent during this period; results are summarized in Table 1.15. The survey indicates that the average monthly rent was \$440 for a single-family dwelling and \$265 for a multi-family unit.

TABLE 1.15
AVERAGE RENTS: 1981

Single-Family Housing

All units	\$440
2 Bedrooms	\$295
3 Bedrooms	\$455
4 Bedrooms	\$445
(4&5 Bedrooms)	\$471

Multiple-Family Housing

All units	\$265
Studio	\$185
1 Bedroom	\$220
2 Bedrooms	\$275
3 Bedrooms	\$340
(3&4 Bedrooms)	\$350

Notes: Based on survey of 21 single-family units (28% of all vacant single-family units) and 29 multiple-family units (34% of all vacant multiple-family units). Survey conducted between September 15 and October 15, 1981, utilizing newspaper ads and multiple listings. Vacancy rates based on April 1, 1980 Postal Vacancy Survey.

Utilization

As used in the U.S. census, "utilization" refers to the number of persons per room in occupied housing units. As used in Table 1.16, an "underutilized" unit means a unit with less than 0.5 persons per room, while an "overcrowded" unit means a unit with more than 1.01 persons per room. As Table 1.16 indicates, the proportion of overcrowded units in the City of Tracy has declined steadily since 1960, while the number of underutilized units has increased substantially.

The decrease in overcrowded units can be attributed to smaller household sizes, greater purchasing power and to government programs that improved opportunities for the lowest income families to obtain adequate housing. The dramatic increase in underutilized units can be attributed in part to occupancy by "empty nesters", but may also reflect a trend towards purchase of multi-bedroom units by single individuals and couples.

TABLE 1.16
UTILIZATION OF HOUSING UNITS: 1960-1980

	Tracy City	
	<u>#</u>	<u>(%)</u>
<u>1960</u>		
Overcrowded ^a	360	(10.3)
Owner Occupied	181	
Renter Occupied	180	
Underutilized ^b	604	(17.2)
Owner Occupied	548	
Renter Occupied	56	
Total Occupied Units	3,493	(100.0)
<u>1970</u>		
Overcrowded	426	(8.8)
Owner Occupied	186	
Renter Occupied	240	
Underutilized	2,239	(46.4)
Owner Occupied	1,389	
Renter Occupied	850	
Total Occupied Units	4,827	(100.0)
<u>1980</u>		
Overcrowded	423	(6.4)
Owner Occupied	n.a.	
Renter Occupied	n.a.	
Underutilized	n.a.	
Owner Occupied	n.a.	
Renter Occupied	n.a.	
Total Occupied Units	6,657	(100.0)

^a1.01 persons per room or more.

^b0.5 persons per room or less.

Sources: 1960-1970 data: U.S. census.

1980 data: San Joaquin County Council of Governments,
Housing Element, 1981

Age and Condition

Table 1.17 illustrates the current distribution of housing units by age for the City of Tracy. Approximately 30 percent of all units were built prior to 1970, while about 31 percent were constructed after 1970.

TABLE 1.17
AGE OF HOUSING CITY OF TRACY: 1980

	<u>Units</u>	<u>Percent</u>
1980-81 ^a	487	6.9
1970-79 ^b	1,646	23.3
1969-70 ^c	107	1.5
1960-68	1,266	17.9
1950-59	1,429	20.2
1940-49	900	12.7
1939 & earlier	1,241 ^d	17.5
Totals	7,076 ^e	100.0

^aJanuary 1, 1980 through September 30, 1981.

^bApril 1, 1970 through December 31, 1979.

^cJanuary 1, 1969 through March 31, 1970.

^d126 units demolished between 1970 and 1980 deducted from this period.

^eColumn does not total to 7,153 units due to discrepancies in past census counts.

Data on the condition of Tracy's housing stock are less readily available. The 1960 census for the Tracy planning area lists 5,277 units (87.6 percent) as "sound"; 491 units (8.2 percent) as "deteriorating"; and 491 units (4.2 percent) as "dilapidated." In contrast, 1980 data prepared by the San Joaquin County Planning Department identifies 7.8 percent of the housing units in both the city and the planning area as being substandard. This breaks down to 770 substandard units in the planning area as a whole, with 556 of these units located in the City of Tracy.

2.0 LAND USE AND CIRCULATION ELEMENT

2.1 LAND RESOURCES

(See the Plan Policies Report, Policy Areas 1, 2, 3, 18, and 25, and the Technical Supplement, Sections 3.3.3, 3.5.4, and 4.1.4.)

Vacant Developable Land Within Tracy

Tracy's incorporated city limits cover 6.9 square miles, or 4,400 acres. Of that total, approximately 1,669 acres, or over 35 percent, are undeveloped (Table 2.1). Most of this vacant land (over 85 percent) is zoned for either low density residential or industrial uses.

About one-third of the vacant land is already slated for development. In addition to the 1,616 units in projects under construction, and subdivisions for which final maps have been approved, tentative or preliminary tentative maps have been filed for 13 subdivisions, for a total of 2,663 new units on 599 acres--or an average density of 4.5 units per acre. (See Section 3.3.3 of the Technical Supplement.)

Assuming that the remaining vacant residential land in large acreages is developed at the same average density and that small parcels (under 20,000 square feet) are developed in accord with existing zoning, the following additional residential construction could be accommodated:

286 acres zoned LDR, MDR, HDR at 4.5 units/acre	=	1,287 units
24 acres zoned RMH	=	435 units
105 small parcels zoned RE	=	105 units
183 small parcels zoned LDR	=	183 units
26 small parcels zoned LDC	=	26 units
17 small parcels zoned MDR	=	68 units*
30 small parcels zoned HDR	=	257 units*
Total	=	2,361 units

*Assumes an average parcel size of 12,000 square feet, 3,000 square feet average MDR unit, and 1,400 square feet average HDR unit. (See Table 2.1 for zoning district names.)

A realistic assumption is that no more than 75 percent of this theoretical capacity will be used during the next 20 years, resulting in 1,770 units. Thus, without annexation Tracy can add more than 6,000 units, an 85 percent increase in the existing stock. Until a program for sewage plant expansion is defined, it will not be known when wastewater treatment can be provided for this number of units.

The three sources of additional housing may be summarized as follows:

- 1,616 units under construction or for which final maps have been recorded.
 - 2,663 units for which tentative or preliminary tentative maps have been filed.
 - 1,770 units on vacant residentially zoned land in the city on which development has not yet been proposed.
- 6,049 potential additional housing units within existing city limits.

TABLE 2.1
VACANT DEVELOPABLE LAND IN TRACY

<u>Zoning Classification</u>	<u>No. of Vacant Parcels Under 20,000 Sq. Ft.</u>	<u>Acres of Vacant Land- Development Proposed^a</u>	<u>Acres of Other Vacant Land</u>	<u>Total Vacant Acreage</u>
Rural Estate (RE)	105	0	0	0
Low Density Residential (LDR)	183	571	335 ^b	906 ^b
Low Density Cluster (LDC)	26	0	0	0
Medium Density Residential (MDR)	17	25	25	50
High Density Residential (HDR)	30	7	13	20
Residential Mobile Home (RMH)	0	0	24	24
Planned Unit Development (PUD)	0	0	0	0
Professional/Medical Offices (POM)	10	0	0	0
Neighborhood Shopping Center (NS)	0	0	2	2
Community Shopping Center (CS)	0	13	0	13
Central Business District (CBD)	25	0	28	28
General Highway Commercial (GHC)	21	22	12	34
Highway Service (HS)	0	0	31	31
Light Industrial (M-1)	1	0	557	557
Heavy Industrial (M-2)	0	0	4	4
Total	418	638	1,031	1,669 ^b

^aIncludes approved commercial developments and residential subdivisions with tentative or preliminary maps.

^bIncludes 87 acres of land zoned LDR but owned by the school districts.

Source: Blayney-Dyett.

Agricultural Lands

The prime agricultural soils underlying and surrounding Tracy have always been the leading contributor to its economy. Today, a majority of the non-governmental jobs in the planning area are in growing, processing, and packaging food products. Nearly all non-urban land in the planning area is devoted to irrigated crops or orchards. The Westside Irrigation District, the Banta Carbona Irrigation District, and the Naglee-Burke Irrigation District operate systems of canals for delivering water. Figure 2.1 depicts extent, type, and quality of agricultural land around the city. The agricultural preserve boundary noted in the figure indicates areas within and adjacent to the City of Tracy not eligible for Williamson Act contracts.

Almost any amount of urban expansion will remove some high quality agricultural land from production, but even the high projection of 20-year population growth would have only a moderate effect on the agricultural economy of the Tracy area. However, the direction of urban growth will affect different types of agricultural land. Although national and worldwide need justifies preservation of agricultural land at some inconvenience to urban development, and public opinion--as shown by polls--supports preservation, little has been done in California to ensure continued use of the best agricultural land. Inferior land can be brought into production at a cost, but it is difficult or impossible for those who must pay the cost of preserving agricultural land to receive the direct economic benefit. Williamson Act contracts that base taxation of agricultural land on its agricultural productivity have only delayed development of certain parcels, shifting urban growth to other agricultural land, often equally productive. Since passage of Proposition 13, the incentive to commit to 10 years of agricultural use as required by the Williamson Act has been weakened because both the tax and the tax saving are smaller. Currently, eight holdings totaling 432 acres in the planning area have served notice of non-renewal of Williamson contracts. These parcels will be eligible for conversion within seven to eight years. The possibility of cancellation of contracts on these or other parcels has been made more likely by passage of A.B. 2074 by the 1981 California legislature.

The income derived by individuals and businesses from agricultural products could be replaced by other activities, but if the opportunity for other economic activity could be preserved with the least displacement of agriculture, total jobs and incomes would be maximized. This could be done by:





- Increasing the intensity of urban development, thereby using less prime land.
- Slowing growth and diverting it to non-agricultural areas, although this would limit economic opportunities in Tracy.
- Directing new development to the least productive agricultural land in the planning area.

A combination of all three strategies could be used. To determine the merits of the third, the productive capability of alternative, potential urban expansion areas must be evaluated.

To measure the benefits of directing development to less productive land, it is necessary to know the difference in annual crop value by location. Land south and east of Tracy (particularly east of Tracy Boulevard) is more



Figure 2.1
AGRICULTURAL FACTORS

-  Agricultural Preserve Boundary
-  Williamson Act Contracts
-  Williamson Act Non-Renewal
-  Best Prime Soils -
Orchards and Orchard Capability

versatile than land to the west and north. Land to the south and east is presently or potentially orchard (almonds, walnuts, apricots), producing an average gross crop value of about \$1,700 per year per acre (1980 dollars). Land to the west and north is suited for row and field crops on a rotation basis--typically two years of tomatoes, one year of grain, and five years of alfalfa or beans. The average annual yield over the eight-year cycle is about \$900 per acre. Foothill rangeland south of the urban planning area produces about \$15 per acre per year. These numbers are approximate and the spread will vary from year to year, but they will serve to illustrate the point.

The money received for a crop is recycled in the Tracy planning area and the total income depends in part on the amount of subsequent processing that occurs locally. Even if the product is shipped immediately, the grower buys food, clothing, equipment, and labor, providing incomes for other planning area residents. The University of California's Cooperative Extension Service has made detailed studies of "income multipliers" for Stanislaus County. Although no similar multipliers have been calculated for San Joaquin County, conditions in the two counties are similar and the multipliers for each crop can be assumed to be reasonably accurate. The range varies widely from 6.8 for vegetables where much processing is involved to 1.6 for livestock. Using the multipliers appropriate to each crop, the total income generated is:

Rangeland @ \$15 per acre x 1.6	=	\$24 per acre
Cropland @ \$900 per acre x 3.5	=	\$3,150 per acre
Orchardland @ \$1,700 per acre x 3.1	=	\$5,270 per acre

If Tracy were to add 25,000 residents at the present density of about 3,000 persons per developed square mile, the 8.33 square miles taken out of agricultural production would have very different effects on the economy, depending on the location of development. Westward expansion of the city north of Eleventh Street would have the least adverse effect on agriculture of any contiguous growth. If new development were all on rangeland south of the I-5 freeway, the loss would be less than \$130,000 per year. The difference between using cropland instead of orchardland would be \$11.3 million annually, while if all new development were on rangeland, the difference would be \$28 million each year. Assuming 50,000 planning area residents, the \$28 million represents \$560 per capita--a figure presented for illustrative purposes only, because the analytical method does not allow the savings to be allocated as per capita income.

Another way of measuring the importance of a decision as to which land should be used is to look at the present value of a 20-year stream of "losses" that would result from a uniform growth rate of 1,250 persons per year, totaling 25,000. Assuming the differences in gross income per acre remain the same and using a 10 percent discount rate, urbanization of the orchardland would cost \$89.8 million, while use of the cropland would cost \$53.7 million, compared with \$400,000 for development of foothill land. This does not automatically lead to a conclusion that economic considerations favor all urban development in the foothills. Development cost, service costs, and transportation costs may be higher there and opportunities for non-agricultural economic activity may be less.

If the density of new development were increased by 10 percent so that only 90 percent of the 8.33 square miles were used for 25,000 new residents, the .833 square miles "saved" would contribute \$900,000 to the economy annually if on orchardland, \$480,000 if on cropland, and \$12,800 if on rangeland.

Rural Development Policies

During the last 20 years, Tracy has annexed nearly 3 square miles, extending in all directions, to reach its current 6.9-square-mile incorporated area. The sphere of influence established by the Local Agency Formation Commission as required by state law includes approximately 20 square miles and forms the Tracy urban planning area for the revised General Plan. The assumption of the city and the county is that new urban development within the sphere will be annexed to Tracy prior to construction and will be served by the city.

The county General Plan states that rural residential areas "should not be established within or on the fringe of designated urban growth areas." The Board of Supervisors will not approve additional rural residential (RR) zoning for new subdivisions with on-site utility systems, although it is possible that minor extension of RR zoning adjoining the half dozen existing subdivisions might be approved. Minimum lot size in the existing RR areas is 65,000 or 100,000 square feet. A few pockets of smaller lots exist. On Velma Lane, south of Valpico, lots are 7,200 square feet, and zoning on Berg Avenue off Fabian Road permits 15,000 square foot lots. The county did approve a package wastewater treatment plant for one proposed subdivision, on the grounds that Tracy was unable to offer service. Subsequently, this parcel was annexed by the city and now is awaiting a sewage allocation. The county does continue to approve on-site sewage disposal systems for commercial and industrial development, notably along East Eleventh Street.

Most of the unincorporated portion of the planning area has had recent zoning changes from general agricultural with a 5- or 10-acre minimum parcel size to 40 acres minimum in order to preserve agricultural viability. This change provides for major city input on decisions about urban expansion on agricultural land.

The county's refusal to allow urban development in the unincorporated area is consistent with the current policy of many or most larger counties, but it does not affect the ability of an owner to seek annexation for urban development. Prior to Proposition 13, owners of undeveloped land normally avoided annexation until just before developing because they did not wish to pay the higher city taxes. Now that city and unincorporated area taxes are the same, early annexation is more usual.

2.2 COMMERCIAL DEVELOPMENT

(See the Plan Policies Report, Policy Areas 5 and 6.)

Existing Commercial Space and Proposed Projects

Twenty years ago, nearly all of Tracy's retail establishments were located around the downtown core of the city, between Sixth and Eleventh Streets on either side of Central Avenue and along Eleventh Street where patronage of Highway 50 travelers could be attracted. More recently, commercial development in Tracy has spread beyond the central business district, and shopping centers have been built or approved near the city's periphery. Commercial development moved outward from the downtown as developers sought land that was cheaper, adjacent to freeway interchanges and major arterial streets, and closer to growing residential areas. Table 2.2 provides an inventory of major commercial retail facilities in Tracy.

TABLE 2.2
EXISTING AND PROPOSED MAJOR RETAIL FACILITIES IN TRACY

<u>LOCATION CENTER</u>	<u>RETAIL TYPES</u>	<u>ESTIMATED SQUARE FOOTAGE</u>
Existing Facilities		
1. Central Business District ^a	Mixed Retail (convenience and comparison goods)	297,000 (217,000 occupied; 80,000 vacant)
2. East 11th Street Commercial Strip ^a	Convenience Goods, Auto-Related Goods and Outlets	90,000
3. West 11th Street Commercial Strip ^a	Convenience Goods, Auto-Related Goods and Outlets	90,000
4. Convenience Center 11th Street and Tracy Blvd. ^a	Convenience Goods, Fast-Food Establishments, Auto-Related Outlets	8,400
5. McKinley Village Tracy Blvd. and Grant Line Road ^b	Thifty, SaveMart, Mixed Retail	82,200
6. Neighborhood Center East Street and Grant Line Road ^a	Value Giant, Don Quick	37,000
Subtotal		604,600
Proposed Facilities (Status)		
7. McKinley Village - Expansion ^b Tracy Blvd. and Grant Line (site plan approved)	Mixed Retail	65,600
8. Valley Center ^b Tracy Blvd. and Clover Road (construction to begin summer 1981)	Lucky's, Long's, Mixed Retail, Services	82,900
9. Westgate Plaza - South ^b 11th Street and Lincoln Blvd. (site plan approved)	SaveMart, Mixed Retail, Auto-Related Outlets	95,500
10. Westgate Plaza - North ^b 11th Street and Lincoln Blvd. (site plan submitted)	Convenience Goods, Auto-Related Outlets, Fast-Food Restaurants	45,400
11. Southern Pacific Center ^a Central Avenue, between 4th and 8th Sts. (site plan to be submitted)	Mixed Retail, with Major Anchor	60,000-120,000 (considered part of Downtown Revitalization Program)
12. Downtown Revitalization Program ^b	Mixed Retail	200,000 (100,000 new construction, including Southern Pacific; 100,000 rehabilitation)
Subtotal		449,400 - 509,400

a. Williams-Kuebelbeck and Associates, Inc., 1979.
b. Tracy Community Development Department.

In 1979, commercial uses occupied about 604,000 square feet of floor area in major retail centers or clusters and another 16,000 square feet are scattered throughout the city, for a total of 620,000 square feet. About half of the commercial space is downtown, which remains the focus for comparison shopping (clothing, appliances, home furnishings, and general merchandise), while outlying centers primarily provide convenience goods (food, liquor, drugs). Unlike many communities of similar size, Tracy has maintained a pleasant, pedestrian-scale downtown. However, the central business district is characterized to some extent by deteriorated buildings, high vacancy rates, and a run-down appearance, particularly along the southern end of Central Avenue. Economic conditions in the downtown have stabilized or improved slightly in the past five years--as evidenced by the recent rehabilitation of storefronts on Central Avenue and higher lease rates--but most of the commercial development approved and scheduled for construction during the next several years will be located in outlying areas rather than downtown.

Downtown retailers and Tracy residents complain that the central business district lacks a complete mix of commercial facilities. The largest store is a 13,000-square-foot Penney's. There is no major retailer to provide a full array of comparison shopping goods and downtown restaurants are not adequate. These needs will not be completely satisfied by any of the new commercial developments.

Tracy is bracketed by regional shopping centers at Pleasanton and Stockton and, within the planning period, its population will not be large enough to attract a competing center. Santa Clara County, the most intensively developed shopping center market area in Northern California, has eleven regional shopping centers--one for each 130,000 residents. Many of the regional centers are smaller than 500,000 square feet and, having only one department store, have lost ground to the larger centers. If current merchandising practices prevail, Tracy will need 100,000 trade area residents to support a regional center, and even then it will be a small one, which will not be fully competitive with the large, more distant malls. Lack of a regional shopping center market enhances downtown's chances of attracting new stores that do not need as large a trade area, but that would locate in a regional shopping center if there were one.

If all the currently proposed commercial development actually occurs, retail space in Tracy could increase by between 70 and 80 percent within the next five years. Well over half (between 55 and 65 percent) of all new retail space will be in the peripheral shopping centers. If one considers only projects that have received city approvals and/or are about to begin construction, then all new commercial development in the near future will occur outside downtown. This reflects developers' preference for building on lower value land with ample parking and good access to the freeway and to arterial streets.

None of the three shopping centers recently approved will dominate Tracy retailing, since none has the floor area or site area. However, if all three are built, the near-term market demand will be diluted. Fragmentation of retailing is likely to prevail for a long time, as no one site in the city has compelling marketing advantages over any other.

Downtown Revitalization Efforts

Recognizing that the central business district would not be able to compete with the outlying sites unless improvements were made, the city began planning to upgrade the downtown in 1974. A particular concern was the need to attract a major tenant to the downtown (such as a junior department store) to make it a more competitive retail center. Initially, the city considered a redevelopment program. However, a suit was filed against the proposed relocation plan; and by the time the suit was settled in the city's favor, Proposition 13 had passed, greatly reducing tax increment as a means of financing the redevelopment project.

The city sought alternative sources of funding, and in 1980 Tracy received a three-year, \$1.5 million grant from the U.S. Department of Housing and Urban Development to revitalize downtown. The Downtown Tracy Comprehensive Program is composed of three main activities: street improvements, commercial rehabilitation and new construction, and residential rehabilitation. Street improvements include realignment and reconstruction of Sixth Street and extension of Central Avenue to Schulte Road. These projects are intended to enhance circulation in and access to downtown, particularly from the south where much new residential development has occurred. Realignment of Sixth Street also will create two potential parking areas that could provide about 90 new spaces. The commercial rehabilitation is assisted by a low interest loan program in which grant funds will be used to leverage private bank monies. The program will encourage both rehabilitation of commercial properties and the establishment of new downtown businesses. The initial program goal is to encourage rehabilitation of 100,000 square feet of commercial space and construction of an additional 100,000 square feet within downtown during the first five years. These goals were based on commitments of interest from private developers--a necessary condition for Tracy to receive full funding of the grant.⁵ In addition to the city's efforts, the Downtown Improvement District (DID, an organization of developers, downtown property owners, and businesses) is trying to win support for a downtown parking district and has commissioned a professional marketing package designed to attract new tenants.

The Downtown Tracy Comprehensive Program represents a major commitment of both private and public funds to improve the central business district. The program is very ambitious, calling for the rehabilitation of one-third of the available commercial space and for an increase in retail square footage by another one-third. The goal of the program is to make the downtown the major retail center for the Tracy trade area--one that offers a variety of choice for comparison shopping goods and that attracts some of the dollars now being spent at regional shopping centers outside the trade area.

⁵City of Tracy, City of Tracy Full Application for 1980-83 HCD Block Grant Funding, July 7, 1980.

Retail Market Demand

Since 1975, the City of Tracy has commissioned three separate studies to evaluate the downtown's economic health, determine the market potential for additional commercial development, and assess the effects of both public and private investment throughout the city.⁶ A particular concern was learning what strategies were available to upgrade and restore economic health to the downtown. The results of these studies are summarized below. Much of the analysis was based on 1978 retail sales data. Because 1980 data were not yet available and the 1979 data did not indicate any major changes, the findings of the October 1979 Williams-Kuebelbeck report were used.

Table 2.3 shows that, between 1972 and 1978, total retail sales (adjusted for inflation) grew more in the county than in the Tracy trade area (12.9 versus 11.6 percent). The slower growth is particularly evident in sales of comparison shopping goods (apparel, general merchandise, home furnishings). For example, retail sales in general merchandise actually declined in the Tracy trade area, while they grew at an average rate of almost 9 percent in San Joaquin County. In contrast, retail sales for "convenience shopping goods" (such as food, drugs, and liquor) fared better, growing at comparable or even higher rates. As a percentage of total retail sales in the county, sales in the Tracy trade area have remained stable at around 5 percent.

The problem of "leakage"--the amount of dollars spent by residents of the trade area in other trade areas--becomes evident if per capita retail sales are compared. During the 1972-78 period, the Tracy trade area experienced an average annual real growth rate in per capita sales of 2.2 percent as compared to 3.5 percent for the county as a whole. Thus, per capita retail sales in the Tracy trade area as a percentage of county per capita sales declined during the period (Table 2.4.) However, in 1979 the share increased to 62 percent compared with 60.9 percent in 1978, possibly indicating a halt in the declining trend. Still, Tracy residents are making 38 percent of their purchases outside the trade area--a higher percentage than in 1972. This is due in part to the increasing proportion of commuters residing in Tracy and in part to dissatisfaction with variety or prices at Tracy stores. If area residents spent as much money at area retailers as was spent on an average per capita basis countywide, then 1978 sales in the trade area could have been about \$110 million compared to the actual \$67 million achieved. The greatest leakages occurred in the general merchandise, home furnishing and appliances, and building materials and farm implement categories. Only drugstore sales showed no leakage and in fact exceeded their market potential. This may have resulted from inclusion of Thrifty Drug as a drugstore rather than a general merchandise store.

⁶Williams-Kuebelbeck and Associates, Inc., Tracy CBD Redevelopment Program: Commercial Market and Economic Feasibility Analysis, May 1975; Commercial Market Analysis Update for the City of Tracy Downtown Development Program, May 1978; Economic/Fiscal Impact Analysis of the proposed General Plan Amendments, October 1979.

TABLE 2.3
RETAIL SALES IN TRACY TRADE AREA AND
COUNTY OF SAN JOAQUIN: 1972, 1976, 1978
(In Thousands of Dollars)

	Tracy Planning Area				San Joaquin County			
	1972	1976	1978	Average Annual % Change 1972-1978	1972	1976	1978	Average Annual % Change 1972-1978
Apparel	\$1,676	\$2,179	\$2,464	6.6	\$22,041	\$29,382	\$33,830	7.4
General Merchandise	3,305	3,493	2,567	(4.1)	86,856	126,874	143,340	8.7
Fooda	13,672	22,044	25,376	10.9	197,292	324,376	389,776	12.0
Packaged Liquor	690	986	1,233	10.2	14,026	19,387	22,873	8.5
Eating and Drinking	3,185	4,467	6,627	13.0	53,706	84,529	108,678	12.5
Drug ^b	1,499	2,621	4,712	21.0	16,757	22,904	35,727	13.4
Home Furnishings & Appliances	750	687	1,231	8.6	25,986	36,232	52,875	12.6
Buildings Materials & Farm Implements	1,432	2,692	3,983	18.6	54,891	90,454	130,583	15.5
Auto Dealers & Supplies	4,489	5,684	7,743	9.5	129,137	179,681	269,737	13.1
Service Stations	2,480	6,696	8,211	22.1	40,900	112,290	129,862	21.2
Other Retail	1,388	2,134	2,714	11.8	37,972	64,565	87,669	15.0
Total	\$34,566	\$53,683	\$66,861	11.6	\$679,564	\$1,090,674	\$1,404,950	12.9

^aAdjusted for non-taxable transactions. Taxable items are estimated at 25 percent of total.

^bAdjusted for non-taxable transactions. Taxable items are estimated at 75 percent of total.

Source: California State Board of Equalization; Williams-Kuebelbeck and Associates, Inc.

TABLE 2.5
TRACY PLANNING AREA CAPTURE RATES
(In Percent)

<u>Classification</u>	<u>1978 Capture</u>	<u>Recapture of Leakage</u>	<u>Total Capture Rate</u>
Apparel	93	2	95
General Merchandise	23	19	42
Food	83	4	87
Packaged Liquor	69	8	78
Eating and Drinking	78	6	84
Drug	100	—	100
Home Furnishings and Appliances	30	18	48
Other Retail	40	15	55

Source: Williams-Kuebelbeck and Associates, Inc.

The amount of recaptured leakage corresponds to an estimate of latent demand for new retail facilities in the trade area, i.e., the amount of new retail space that could be supported there. In 1978, local demand could have supported an additional 70,000 square feet of retail space. Williams-Kuebelbeck projected the sales potential to 1995 using the countywide average per capita gain in real value during 1972-78—3.2 percent for restaurants and 2.7 percent for all other categories. This assumption of a continuing increase at the 1972-78 rate results in a more than doubling of per capita purchases in constant dollars over the 17-year projection period. It is based on the expectation that high prices for new housing will attract buyers with higher per capita income than current Tracy residents; however, it is possible that high housing costs will leave many newcomers with no larger budget for retail purchases than occupants of less expensive housing.

By 1995, the cumulative potential demand for more retail space could reach 700,000 square feet (as compared to about 600,000 square feet of retail space that exists today) if trade area population reaches 38,000 as projected by Williams-Kuebelbeck. Table 2.6 summarizes the potential demand for new commercial space between 1978 and 1995. Because this projection is based on a population projection that is lower than the high projection described in Section 2 of this report, it is possible that additional retail space could be supported. If planning area population reaches 52,300 in 2000, the same assumptions about supportable retail space would result in a cumulative increase of 960,000 square feet.

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TABLE 2.6
INCREMENTAL DEMAND FOR RETAIL
SPACE IN TRACY TRADE AREA^a

<u>Retail Category</u>	<u>1978 Recapture</u>	<u>1978- 1985</u>	<u>1986- 1990</u>	<u>1991 1995</u>	<u>Total</u>
Convenience Goods	14,290	66,830	88,850	131,160	301,130
Comparison Goods	51,840	60,210	77,040	103,500	292,590
Eating and Drinking	3,870	23,760	30,510	41,940	100,080
Total	70,000	150,800	196,400	276,600	693,800
Cumulative Total	70,000	220,800	417,200	693,800	693,800

^aAssumes 2.61 percent annual population increase.

Source: Williams-Kuebelbeck and Associates, Inc., 1979.

The projections in Table 2.6 break down to an average annual potential demand for 40,800 square feet of retail space. This would represent one new neighborhood shopping center per year, primarily composed of convenience stores. However, the study concluded that the demand for convenience goods appears to be limited until after 1985. In the short term, the greater demand in the Tracy trade area is for comparison goods (112,050 square feet versus 81,120 square feet).

Timing and Absorption of New Commercial Development

A comparison of projected demand for new retail space with the proposals for commercial development (693,800 versus a maximum of 509,400 square feet) indicates that all new retail facilities could be supported by 1995. However, within the next five years, it is possible that the supply of new retail space will exceed the demand for it, even considering only those proposals that are in the more advanced stages (site plan that has been submitted to the city). The commercial projects most likely to be built in the near future are all outside downtown. They would provide a total of 289,400 square feet of retail space, exceeding the 1985 cumulative demand of 220,800 square feet. Although it is not possible to predict whether all of the proposed commercial development actually will be constructed (financing may be difficult to obtain, for example), it appears that there is potential for overbuilding retail space within the next five years. This problem could be more acute, considering that convenience goods are likely to be emphasized in the new centers and that demand for convenience goods is particularly limited until at least 1990. If retail space is overbuilt in Tracy, the businesses most likely to suffer would be the older, smaller establishments that could not compete with the newer stores. As their opportunities decrease, these more marginal establishments would begin to vacate their leased space. The vacant retail space would probably remain unfilled until the trade area grew.

Tracy's zoning ordinance does not provide for a neighborhood shopping center, as the term is normally used, because the NS Neighborhood Shopping Center District does not permit a store larger than 3,000 square feet and the CS Community Shopping Center District applied to Tracy's neighborhood shopping centers allows apparel and accessories stores, general merchandising stores, and other comparison goods outlets. It is possible, although not usual, to restrict

neighborhood shopping center uses to those that do not belong downtown; however, the list of 20 tenant types most frequently found in the neighborhood shopping centers includes variety stores; ladies' apparel; radio, TV, and Hi-Fi; hardware, cards, and gifts; jewelry; super drug; and bank.⁷ Median size for U.S. neighborhood shopping centers in 1978 was 54,000 square feet--somewhat less than three of the four centers proposed in Tracy. The larger "neighborhood" centers are most likely to include comparison goods.

Downtown Development Potential

How can the downtown be developed as a major shopping center? Previous economic studies indicated the need to "anchor" the retail center with a junior department store. Downtown merchants and city officials have echoed this concern, suggesting that a store such as Mervyn's would be desirable. Yet it is doubtful that the Tracy market could meet the chain's minimum requirements.⁸ Although Mervyn's does not usually select downtown locations, it is flexible and sites that are freestanding, along strips, or in regional malls are acceptable. On occasion, Mervyn's has located downtown (Marysville, Napa), but almost always as part of a redevelopment program where some public investment or subsidy is involved. The typical store offers almost 75,000 square feet of retail space and requires a trade area population of at least 60,000 people. If a competing store is also located in the trade area, then the supporting population must be doubled. The greatest hindrance to locating a Mervyn's in Tracy is the small size of the trade area, which is not projected to reach 60,000 people by the year 2000, even assuming a high rate of growth.

Even if the trade area were to grow dramatically, any regional retail center that developed downtown would be small and would not be fully competitive with the larger, more distant regional shopping centers at Pleasanton and Stockton. The regional shopping center is so strongly entrenched in American consumer habit that only the largest cities or isolated communities too small to support a regional mall are able to maintain substantially the same selection of merchandise in a traditional business district. The reasons include the greater opportunity for developer profits, the refusal of major department stores to accept downtown sites, and the inability of non-chain retailers to maintain the unified advertising and long hours required of shopping center tenants. Given these conditions, downtown revitalization efforts are likely to be limited if they rely only on the demand for traditional comparison goods.

Positive factors affecting downtown development are:

- An increasing ability of a larger and more affluent population to support one (or two) of a kind stores such as bakeries, health foods, sporting goods, hobby, camera, arts and crafts, imports, luggage, books, stationery, yard goods, pet shop, flowers, plants, formal wear, etc.
- A desire by many consumers for an alternative to "plastic" regional shopping center environments and chain stores.

⁷Urban Land Institute, 1978. Dollars & Cents of Shopping Centers.

⁸The following information on Mervyn's general siting requirements is summarized from a telephone conversation with Michael Burke, Director of Strategic Planning, Mervyn's, April 15, 1981.

- A renewed interest in retailing by capable young persons who wish to operate independent businesses.
- An increasing demand for office space in a paper processing and professional services society, coupled with the substantial cost saving of rehabilitating older commercial space as compared with construction of new office space.
- A steadily increasing ability to support restaurants resulting from a long-term rise in discretionary income and the prevalence of two-wage-earner households.

Need for Additional Commercial Land

Tracy now has 108 acres of commercially zoned vacant land--theoretically enough for the needs of 15,000 additional residents at a generous standard of 7 acres per 1,000. The General Plan recognizes nearly all of this land and adds about 77 acres of thoroughfare commercial at the Tracy Boulevard and MacArthur Drive interchanges with the I-205 freeway.

Santa Clara County, which has intensive retail development, supports one neighborhood shopping center for each 9,000 residents. By this standard, Tracy in the year 2000 will need five shopping centers. Three exist and one has been approved on Eleventh Street at Lincoln Boulevard. A future shopping center on the bow tie property south of Sixth Street desirably would function as a part of downtown and is not counted as a neighborhood shopping center. This leaves a potential for one new neighborhood shopping center in the vicinity of Tracy Boulevard and Central Avenue extension or Schulte Road to serve new development projected during the next 20 years. If Westgate Plaza, the approved center on Eleventh Street, is successfully completed, the need for the Schulte Road Center would not exist until 1990.

Neighborhood stores such as groceries, cleaners, and laundrettes exist in two urban neighborhoods. Such stores are desirable for their conveniences and their contribution to reducing automobile shopping trips, but the economic viability of stores that draw on a walking distance market area often is tenuous. If developers and tenants for such stores can be found, approval in newly developing areas would be consistent with the General Plan.

Office Development

National employment patterns show a continuing increase in office jobs as a share of all employment. Although Tracy has no large office employers now, increases in the office employment share are expected from two sources. As Tracy grows, local-serving office functions will increase with population, and some functions now performed in Stockton or other larger communities will locate in Tracy. A second and less predictable source of office employment will be region-serving offices with large work forces engaged in partially automated data processing. Insurance claim processing, bank data processing, and similar operations have relocated outside the metropolitan centers where both land and labor are cheaper. This spreading ripple has not yet reached Tracy, but some such development reasonably can be anticipated during the next 20 years.

Need for Additional Office Land

The assumptions of Table 1.7, based on Employment Development Department state-wide employment by three digit SIC industry classifications, were used in projecting the demand for office sites outside industrial areas:

TABLE 2.7
OFFICE EMPLOYMENT BY INDUSTRY GROUP

<u>Industry Group</u>	<u>Year 2000 Total Employment^a</u>	<u>Assumed Percentage in Offices</u>	<u>Calculated Office Employment</u>
Construction	1,000	10	100
Transportation and Utilities	1,200	20	240
Finance, Insurance and Real Estate	500	100	500
Services	2,600	50	1,300
Government	5,500	10 ^a	550
			<u>2,690</u>

^aFrom Table 1.6.

^bExcludes schools and institutions and city government.

Assuming an average density of 25 employees per acre, 108 acres will be occupied. Much of this office employment will be downtown and along Eleventh Street, sometimes on the upper levels of buildings with retailing on the ground floor. About one quarter of the services employment will be in health services and will be concentrated in and near Tracy Community Memorial Hospital. The General Plan designates about 80 acres at Corral Hollow and Grant Line Road for region-serving offices.

2.3 INDUSTRIAL DEVELOPMENT

(See the Plan Policies Report, Policy Area 7.)

Tracy has been described as "the city where industry and agriculture meet," and the city's oldest and largest industries are agricultural processors. Most recently, the industrial base has diversified, as manufacturers have moved to Tracy to take advantage of its central location, low costs, and its excellent access to both rail and highway systems. There are 14 major industries in Tracy, with a total combined employment of 2,300. Manufacturing and warehousing are clustered in three distinct areas: north of the I-205 freeway east of Tracy Boulevard; along the Southern Pacific tracks, between Grant Line and Eleventh Street; and along the southern portions of Tracy Boulevard, between Valpico and Linne Roads. Table 2.8 summarizes pertinent information on leading manufacturers in the city.

There is a potential for significant industrial expansion in Tracy. Vacant land is not a limiting factor. A survey of major manufacturers revealed that all were located on sites that would permit expansion and over half of the

industries anticipated some growth within the next five years.⁹ If economic conditions permit, it is likely that employment within these firms alone will increase by at least 10 percent by 1985.

Vacant land also is available for new industrial facilities, much of it in two large sites owned by the two railroads, Western Pacific and Southern Pacific. Western Pacific owns 300 acres southeast of the Tracy Boulevard and Valpico Road intersection. About 60 acres have been developed (Owens-Illinois Forest Products, Celotex, and Laura Scudders) and the remainder is in short-term leases to agricultural users. Western Pacific develops the land with streets, sewer lines, and storm drainage systems. The company prefers to make the land available to rail users, since it has already put in a drill track, but will accommodate other industries. Southern Pacific owns about 150 acres, of which only 10 are developed (Handyman, Inc.), southeast of the intersection of Grant Line Road and MacArthur Drive. The company is waiting to market the land until sewage capacity becomes available and it can put in improvements, possibly in two years time. When it is ready to market the property, Southern Pacific will seek out rail-oriented industries, primarily shippers of bulk raw materials.¹⁰

Another 100 acres of vacant, industrially zoned land lies on either side of Larch Road, in the vicinity of the sewage treatment plant.

The city is actively seeking new industry, primarily through the Tracy Economic Development Committee, a joint effort of the city and the Chamber of Commerce. It has prepared an information package, which is available to manufacturers considering a Tracy location. Potential new industries include light manufacturing and warehousing and distribution facilities. The Economic Development Committee has received a number of inquiries from Silicon Valley firms interested in locating an assembly plant in the area, to take advantage of the abundant labor supply and the cheaper housing. Tracy's central location makes it a desirable site for warehousing and distribution facilities, for both existing industry in Tracy and the agricultural production and processing centers in the San Joaquin Valley.

Tracy's principal competition for new industrial development will come from nearby communities such as Stockton that can offer similar amenities (vacant land, central location, transportation access). However, its potential for industrial growth is presently limited by lack of capacity in its wastewater treatment system. In 1978, the city had to institute a growth management system to allocate the remaining plant capacity among three categories of users—residential, commercial, and industrial. At present only about 15,000 gallons per day of capacity are still available for new industry.¹¹ The city has begun a program of plant improvements, which should be completed by 1984. However, it is not possible to predict exactly how successful the modifications will be or how much more capacity will become available. Until that time, the

⁹Blayney-Dyett, "Tracy General Plan Revision - Survey of Major Employers," April 1, 1981.

¹⁰Personal communication with Richard Hocker, Western Pacific, on March 20, 1981 and with Peter Gessert, Southern Pacific, on April 16, 1981.

¹¹Additional industrial development could occur within the Tracy Boulevard Assessment District, which is exempt from sewer allocation constraints.

TABLE 2.8
INDUSTRIAL DEVELOPMENT IN TRACY

Company	Product	Year	Site	Employment ^a		Possible Expansion Plans (to 1985)
		Located in Tracy	Area (Acres)	Average	Peak	
APAC Manufacturing Company	Underground Pipe Fittings	1980	2	22	28	10,000 more square feet of building; 12 new employees
Celotex Corporation	Insulation Board	1980	20	36	—	55 new employees
Courier Citizen Company	Manufacturing and Distribution of Business Forms	1964	16	85	—	About to construct an additional 50,000 square feet; 20 new employees estimated
Doane Products Company	Pet Food	1975	5	46	—	Unknown
Fortifiber Corporation	Reinforced and Water-Proofed Papers	1954	6	35	—	None
Georgia Pacific	Chemicals, Bleach, Antifreeze, Plastic Bottles	1978	20	65	80	Yes, but unknown
Handyman, Inc.	Distribution Center	1971	10	45	—	None
H. J. Heinz Company	Canned and Bottled Food Products	1947	72	450	1,000	None
Holly Sugar	Sugar Processing	1917	60	260	580	Unknown
Laura Scudders Snack Foods	Snack Foods	1964	15	210	250	Approximately a 40% increase
Leprino Foods ^b	Cheese, Whey By-Products	1975	—	250	—	Between 25-50 new employees
Lone Star Industries	Sand, Gravel, Road Base Material, Concrete	1947	500	29	32	None
Owens-Illinois Forest Products	Corrugated Boxes	1980	18	97	—	Yes, but unknown
Owens-Illinois Glass Container Division	Glass Containers	1964	150	650	—	Unknown
Ameron Pipe Products	Steel and Concrete Pipe	1981	83	60	—	Plant under construction; employment to reach 200 by 1983
Teichert Aggregates	Road and Paving Materials	1954	—	22	40	Unknown

a. Includes both full-time and part-time employment.

b. Formerly California Cooperative Creamery.

uncertainty over sewage capacity will hamper the city's ability to attract new industry. For example, Western Pacific believes that once adequate treatment capacity is assured, it could raise the price of its industrial land from the present \$35,000 to about \$45,000 per acre. Southern Pacific is unwilling to market any of its land until the sewage capacity problem is resolved.

2.4 OPEN SPACE AND RECREATION

(See the Plan Policies Report, Policy Areas 8 and 9, and the Technical Supplement, Sections 4.1.3 and 4.1.4.)

The four types of open space described in Section 65560 of the State Planning Law are treated as follows:

- (1) Open space for preservation of natural resources. Such areas do not exist and are not proposed within the Tracy General Plan area.
- (2) Open space used for the managed production of resources. Agricultural land is discussed in Sections 2.1 and 4.1.4, and gravel extraction is discussed in Section 4.1.3 of the Technical Supplement.
- (3) Open space for outdoor recreation is discussed under Recreation and under the heading "Greenways" below.
- (4) Open space for public health and safety. Such areas do not exist, but open space for storm-water retention or percolation may be proposed by current drainage studies.

Greenways

Greenways are intended to accomplish three purposes:

1. Provide a visual and noise buffer between a heavily traveled street and a residential neighborhood or school or between industrial and residential development.
2. Enhance the identity and quality of Tracy by providing a green band along certain arterial streets.
3. Provide a pedestrian, jogging, and bike path removed from the noise and fumes of heavy traffic.

Each greenway must be designed to fit the needs of the particular location and the space available. Greenways separating residential development from an arterial street should include an earth berm so that little or no need be visible from the street. Similarly, berms adjoining new non-residential development should be high enough to screen views of parked cars. Where the greenways adjoins already developed property, much of the landscape treatment may have to be within existing rights-of-way, but visual continuity should be maintained, perhaps relying heavily on double rows of trees.

Greenways are of citywide benefit as well as of benefit to abutting property owners. They should be developed by owners in accord with a design prepared or approved by the city and maintained by the city, or by a landscape maintenance district, or by a homeowners' association.

Park Planning

The City of Tracy has no single city department responsible for planning and operating recreational facilities and activities. There is a Tracy Recreation Commission, which operates through a joint powers agreement between the city, the school districts, and San Joaquin County, each of which makes contributions to the Commission's budget. The Commission's operating funds are derived through a combination of user fees and contributions from the four public agencies involved in the joint powers agreement. The City of Tracy contributes about 50 percent of the total, with the remaining 50 percent divided between the county and the two school districts.

Because of the joint powers agreement, many of Tracy's recreational facilities are the result of a cooperative effort between two or more public agencies. For example, the land for the baseball complex at Monte Vista Middle School was provided by the Tracy School District, but the city leveled the surface and installed the turf, sprinklers, and bleachers; the High School District now maintains the field as part of its facilities.

However, this cooperative arrangement has certain drawbacks, principally because there is no centralized authority responsible for long-term facilities planning and needs assessment. The Tracy Recreation Commission coordinates and schedules recreational programs at existing sites, while the city's Maintenance and Operations Department takes care of the daily upkeep.

The City Manager's office is presently analyzing the financial implications of maintaining and improving the recreation system. The study will examine the city's financial status in light of competing needs; what recreational services are provided and how much participation results; what future demands and needs are likely to be; and what is the potential to obtain private sector funds to support recreation. The city also has begun preparation of a storm drainage master plan, and there will need to be an analysis of the potential for coordination and joint use of park facilities with the storm drainage system, as has been done in other cities such as Lodi and Visalia.

Adequacy of Existing Facilities

Tracy's recreational needs and facilities were last inventoried in 1973, when the Open Space, Conservation, and Recreation Elements of the General Plan were prepared by Lampman and Associates. Since then, four small parks have been developed, expanding the total amount of park land in the city from 55.8 to 76.7 acres, an increase of almost 25 percent. Recreational facilities at several of the older parks also have been improved, with the addition of tennis and handball courts. The most recent addition to Tracy's park and recreation system is the Community Center completed in January 1981. The center is designed for use by community groups and offers such facilities as large and small meeting rooms, a stage, and a kitchen. The half-acre site on which the Community Center is located will become Village Park No. 1. In addition to the city's parks, Tracy residents use the recreational facilities--such as swimming pools, tennis courts, and softball diamonds--which are available at the schools. Existing parks and recreational facilities are summarized in Tables 2.9, 2.10, and 2.11.

The 1973 Recreation Element compared recreational facilities with the standards recommended by the National Recreation and Park Association and by the Park and Recreation Division of the League of California Cities. Criteria used to assess the adequacy of the city's parks and recreation system include:

TABLE
TRACY LOCAL PARKS

Local Parks	Type	Acreage	Ownership	Play Apparatus	Family Picnic Area	Group Picnic Area	Swimming Pool	Baseball Diamonds	Softball Diamonds	Tennis Courts	Community Center Building	Horseshoe Courts	Open "Free Play" Area	Handball Court	Basketball Court	Off-Street Parking	Night Lighting	Soccer Field
Dr. Powers Park	N	12.6	C	X	X	X	X	-	-	X	-	-	X	-	-	X	X	-
El Pescadero Park	N	14.2	C	X	X	X	-	-	-	-	-	-	X	-	-	X	X	-
Fine Park	M	0.5	C	-	X	-	-	-	-	-	-	-	X	-	-	-	X	-
Lincoln Park	N	11.7	C	X	X	X	-	-	X	-	-	X	X	-	-	X	X	-
McDonald Park	M	1.5	C	X	X	X	-	-	X	-	-	-	X	X	X	-	x	-
Monte Vista Park	N	11	E	-	-	-	-	X	X	-	-	-	-	-	-	-	-	-
Palm Circle	N	4.0	C	X	X	-	-	-	-	-	-	-	X	-	-	-	X	-
Village Park #1 (Community Center Site)	M	0.5	C	-	-	-	-	-	-	-	X	-	X	-	-	-	-	-
Village Park #2 (City Hall Site)	M	1.6	C	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
South School Park	N	7.0	E	-	X	-	-	-	X	-	-	-	X	-	-	X	X	X
Tracy Ball Park	N	10	C	-	-	-	-	X	X	-	-	-	-	-	-	X	X	-
Westchester Green	M	2.1	C	-	-	-	-	-	-	-	-	-	X	-	-	-	-	-
Total Acreage		76.7																

C = City E = Elementary School M = Mini-Park N = Neighborhood Park

(1) Plans in preparation; construction to start late 1982

Source: Open Space, Conservation, and Recreation Elements, July 1973; Recreation and Parks Commission; Community Development Dept

- Quality of the resource (number of park acres, baseball diamonds, or swimming pools per 1,000 people);
- Diversity of the resource (different size parks, active and passive recreational facilities, special programs for children, seniors, families, etc.);
- Quality of the resource (maintenance, safety);
- Accessibility of the resource (location, proximity to residential areas, hours of operation).

The 1973 element pointed out a number of instances where Tracy's park and recreation system did not meet the standards. Although the total park acreage was abundant for the population, the city lacked a large (20-50 acres) community park with leisure facilities that could serve many neighborhoods. Secondly, parks in Tracy were not well distributed in relation to population: of the nine planning areas outlined by the Recreation Element, five had no parks at all. Finally, the city did not have enough facilities to meet active recreational needs, particularly for sports. Most of the concerns noted in the 1973 element are still valid today.

Perhaps the most pressing need is for a park in the southern portion of Tracy, where substantial residential growth has occurred in the past five years. At present, that part of the city south of the "bow tie" area is served only by the small McDonald Park (1.5 acres) and the softball field at South School Park. The city does not own any vacant land in the south that could be developed for recreation. Suggestions for remedying the problem have ranged from selling a portion of the Tracy Ball Park to buy land in the south to requiring land dedications from developers. Decisions on the location of a new southern park should be based on several criteria, including: location relative to new growth; potential for multiple uses (storm drainage, land-use buffering); and presence of natural amenities.

Apart from the need for a new park, many of Tracy's facilities need upgrading. The community pool (The "Tracy Plunge") is over 50 years old and the plumbing is in poor condition; however, it is the only pool in Tracy suitable for instructing small children. The other two pools at the Tracy High School are not available during all of the swimming season and are often very crowded. Improvements to the city's softball diamonds are also necessary. Softball is perhaps the principal recreation in Tracy, with about 1,500 young adults involved in the city leagues.

Recreation Planning Criteria

Recreation capital improvement fees collected as a condition of development approval (\$107 per bedroom or per mobile-home site) have so far been spent for improvements at existing parks, so new parks will have to be acquired with fees yet to be collected. The fee should be adjusted to reflect land price increases if it is to remain adequate for its intended purpose.

Using a standard of 2.5 to 5.0 acres of neighborhood and community park land per 1,000 residents (the San Joaquin County standard is 5.0; the National Park and Recreation Association, 4.0), the Tracy urban area currently would need 20 to 100 acres. The present supply is 80 acres. Despite this theoretically adequate acreage, some neighborhoods are not well served, some parks are too small or are visually too inaccessible to be intensively used, some lack

TABLE 2.10
TRACY RECREATION FACILITIES

<u>Local Recreation</u>	<u>Ownership</u>	<u>Type</u>	<u>Use</u>
El Portal Ball Park	E	Special Use - Public	Athletics - Public & Schools
Tracy Ball Park	C	Special Use - Public	Athletics - Public & Schools
Tracy Plunge	E	Special Use - Public	Aquatic Instructional & Recreational - Public & Schools
Tracy High School Pools	H	Special Use - Public	Aquatic Instructional & Recreational - Public & Schools
Tracy Recreation Center	C	Community Bldg. - Public	Community Social & Recreational Activities
Community Center	C	Community Bldg. - Public	Community Social & Recreational Activities
Tracy High Gymnasium	H	Special Use - Public	School and Community Uses
Boy Scout Center	P	Special Use - Semi-Public	Boy Scout Activities
Girl Scout Center	P	Special Use - Semi-Public	Girl Scout Activities
Tracy Bowling Center	P	Commercial Recreation	Bowling, Related Activities
Grant Theater	P	Commercial Recreation	Visual Recreation
Tracy Racquet Club	P	Special Use - Private	Tennis, Racquetball
Tracy Golf & County Club	P	Special Use - Private	Golf

C = City
E = Elementary School
H = High School
P = Private

Source: Open Space, Conservation, and Recreation Element, July 1973; interview with Joseph Wilson, Recreation and Parks Commission, March 21, 1981.

TABLE 2.11
TRACY SCHOOL RECREATION FACILITIES

<u>Name</u>	<u>Total Acres</u>	<u>Open Space</u>	<u>Play Apparatus</u>	<u>Swimming Pool</u>	<u>Baseball</u>	<u>Softball</u>	<u>Tennis</u>	<u>Multi-Purpose Courts</u>	<u>Parking</u>	<u>"Free-Play" Area</u>
North	9.4	7.5	X	-	-	X	-	X	X	X
West Park	4.1	3.2	X	-	-	X	-	X	X	X
Monte Vista	22.6	18.0	X	-	-	X	-	X	X	X
McKinley	10.6	8.5	X	-	-	X	-	X	X	X
South	12.0	9.6	X	-	-	X	-	X	X	X
Central	6.0	4.8	X	-	X	X	-	X	X	X
Clover	12.0	9.6	X	-	-	X	-	X	X	X
Tracy Joint Union H.S.	31.4	18.8	-	-	X	X	X	X	X	X
Duncan Russell H.S.	0.75	0.6	-	X	X	X	-	X	X	X
TOTAL	108.85	80.6	-	-	-	-	-	X	X	X

Source: Open Space, Conservation, and Recreation Element, July 1973; Office of Tracy Public Schools Superintendent.

landscaping, and there is no true community park. Acquiring and developing a community park of up to 40 acres will be a long-term project, but if it is to be reasonably central to the community as a whole 20 years hence, a site must be reserved soon.

The City Council and City Planning Commission are generally pleased with the joint development and use policy that has called for neighborhood parks to adjoin schools. Two of the three proposed neighborhood parks are on undeveloped sites owned by the school districts.

2.5 SCHOOLS

(See the Plan Policies Report, Policy Area 10.)

Enrollment

Most of the Tracy General Plan area is served by the Tracy School District (elementary and middle schools) and by the Tracy Joint Union High School District, which function under a common administration. There are five elementary schools, two middle schools, one high school, and a continuation high school. Jefferson Elementary School District and the Tracy Joint Union High School District serve residents south of Valpico Road. There are three parochial elementary schools in the city.

School enrollment has fluctuated slightly over the past six years, but has been increasing most recently, particularly in the elementary grades (Table 2.12). Discussions with school officials and comparison of current enrollment with available capacity indicate that all the elementary schools are nearing or exceeding capacity (see Table 2.13). Portables are already used at all school sites and, in some instances, special-purpose rooms (such as faculty lounges or language laboratories) have been converted to classrooms to create additional space. At present, about 270 students in grades K-8 (9 percent of enrollment) are bused to alleviate overcrowding. Students are bussed primarily from the McKinley and South Schools service areas to North and Central Schools.

Projected Schools Needs

Current enrollment per household averages approximately .40 K-8 students and .18 9-12 students. Overbuilding and overcrowding in other communities subject to rapid growth demonstrate the difficulty of long-range school planning. Thus, use of portable classrooms not only is a current economic necessity but a precaution against future empty classrooms. New neighborhoods composed of tract homes will not generate as many students as when the initial occupants reach their maximum demand on the school system. Thus, building for peak conditions is not efficient and Tracy should anticipate a need to shift attendance boundaries and possibly to continue some busing. If the growth rate projected by the General Plan is sustained and if birth rates do not change, it is unlikely that the number of students per household in Tracy will drop much below current ratios by the year 2000. The General Plan proposals assume no change. However, it should be noted that many growth areas are finding that the student generation ratios are again increasing. This points up the need for continually updating the school data and plans.

TABLE 2.12
ENROLLMENT IN TRACY PUBLIC SCHOOLS, 1975-1981

	<u>1975- 1976</u>	<u>1976- 1977</u>	<u>% Change</u>	<u>1977- 1978</u>	<u>% Change</u>	<u>1978- 1979</u>	<u>% Change</u>	<u>1979- 1980</u>	<u>% Change</u>	<u>1980- 1981</u>	<u>% Change</u>
Grades K-8	3,032 ^a	2,896 ^a	-4.5	2,947 ^a	1.8	2,878 ^a	-2.3	2,996 ^b	-4.1	3,082 ^b	2.9
Grades 9-12	1,781 ^a	1,795 ^a	0.8	1,777 ^a	-1.0	1,733 ^a	-2.5	1,698 ^a	-4.2	1,773 ^b	4.4
Total ^c	4,813 ^a	4,691 ^a	-2.5	4,724 ^a	0.7	4,611 ^a	-2.4	4,694	1.8	4,885 ^b	4.1

^aAs of October of that year.

^bAs of March of that year.

^cDoes not include 299 children enrolled in three parochial elementary schools.

Source: Office of the Superintendent, Tracy Public Schools.

TABLE 2.13
SCHOOL CAPACITY AND ENROLLMENT, 1981

<u>School</u>	<u>Grades</u>	<u>Number of</u> <u>Portables^aEnrollment^b</u>		<u>Capacity^c</u>
South	K-5	6	358	348
Central	K-5	3	559	551
McKinley	K-5	4	406	406
North	K-5	1	501	522
West Park	K-5	4	204	203
Total		18	2,028	2,030
Clover	6-8	3	495	539
Monte Vista	6-8	3	491	539
Total		6	986	1,078
Tracy Joint Union H.S.	9-12	9	1,669	1,800
Duncan Russell H.S.	9-12	5	104	150

^aIncludes both classrooms and special service space such as libraries, restrooms, locker buildings, etc.

^bDoes not include special education students.

^cBased on an average classroom size of 29 for grades K-8 and 26 for grades 9-12.

Source: Office of Superintendent, Tracy Public Schools

Present K-8 capacity is 2,030 and can be increased to 2,500 by adding 16 portable classrooms on existing sites (see Table 2.14). When the General Plan area population reaches 43,700, the projected 15,440 occupied housing units in the Tracy School District will generate 4,167 K-8 students at .40 per unit. Assuming a .27 students per unit in K-5 and .13 in 6-8, the 1,668 K-5 students and 929 6-8 students who cannot be accommodated in existing schools will require three K-5 schools at 560 students each and one new 6-8 grade school.

The General Plan proposes construction of two new K-5 schools on sites already owned by the Tracy School District and one on a new site south of Schulte Road. A middle school is also proposed on a new site south of Schulte Road. A second high school serving 1,680 students is proposed on a portion of a 77-acre site west of Lincoln Boulevard owned by the Tracy Joint Union High School District. This assumes that enrollment excluding continuation high school, will remain constant at .18 students per occupied housing unit.

TABLE 2.14
TRACY PUBLIC SCHOOLS
POTENTIAL FOR ADDING CAPACITY

<u>School</u>	<u>Total Acres</u>	<u>Available Acres^a</u>	<u>Potential Additional Portable Classrooms</u>
South	12.06	approx. 1 1/2 acres	6
Central	6.20	0	0
McKinley	10.69	approx. 1 1/4 acres	5
North	9.43	0	0
West Park	4.10	0	0
Clover	12.50	approx. 1/2 acre	2
Monte Vista	22.60	approx. 1 acre	3
Tracy H.S.	31.46	0	0
D. Russell H.S.	.86	0	0
			<u>16</u>

^aAreas that could be occupied by portables without violating applicable state standards.

Source: Verlin N. Buchard, Assistant Superintendent for Business Services, Tracy Public Schools.

Children residing south of Valpico Road are served by the Jefferson Elementary School District. Enrollment at Jefferson School at Chrisman Road and Linne Road has remained stable over the past five years, and there is room for another 91 students at present (209 pupil enrollment vs. 300 pupil capacity).¹² When the 145 acres designated for residential use are fully developed, there will be at least 320 students, requiring a new school west of Tracy Boulevard.

Financing School Construction

Because Proposition 13 eliminated general obligation bonds as a source of school construction funds, the City of Tracy instituted development fees in 1980 (\$275 per bedroom for each residential unit and \$550 per dwelling unit for mobile-home parks) to finance interim facilities in overcrowded elementary school attendance areas. It is expected that interim facility fees will soon need to be considered for the high school. Methods for providing permanent school facilities will need to be continually explored.

¹²Telephone conversation with Mr. Tomas W. Hawkins, Superintendent and Principal, Jefferson Elementary School, September 29, 1982.

2.6 PUBLIC UTILITIES

(See the Plan Policies Report, Policy Area 11.)

The General Plan does not include proposals for utilities or drainage because insufficient current information is available. Studies underway during late 1981 on wastewater treatment, water supply, and drainage may affect the land use proposals of the General Plan sequence of development.

Wastewater Treatment

The City of Tracy provides wastewater collection, treatment, and disposal service to about 6,200 homes as well as to industry. Three separate systems--one domestic and two industrial--collect wastewater and convey it to the treatment plant east of Holly Drive, north of the I-205 freeway. One industrial system collects wastewater from Heinz and Laura Scudders, the other from the Leprino Cheese plant.

The city completed an expansion of its treatment plant in 1976; however, process and equipment failures occurred throughout the first year of operations, with adverse effects on all phases of treatment and disposal. In 1977, a study was prepared to determine whether the plant was large enough to handle the wastewater flows it was receiving. The study concluded that, while the plant's total design capacity of 5.5 million gallons per day (mgd) was appropriate, its ability to process certain components of sewage flow was less than expected. In particular, industrial flows exceeded the plant's processing capabilities, resulting in overloading and poor effluent quality.¹³

In April 1978, as the city was designing interim facilities to solve some of the more immediate problems, the California Regional Water Quality Control Board, Central Valley Region, issued a cease and desist order. The order required the city to prepare a more thorough evaluation of the plant's ability to treat domestic and industrial flows; to prepare a plan and schedule for constructing permanent improvements; to provide "wet" industries from connecting to the plant; and to establish growth restrictions to ensure adequate capacity and compliance with waste discharge requirements.

That year, the city commissioned an engineering report to specify the deficiencies that existed in the system and to evaluate alternative methods for correcting them.¹⁴ It also developed a growth management system to allocate the remaining available sewage treatment capacity (approximately 0.21 mgd) among three classes of users: residential (subdivisions and single lots), commercial, and industrial. Some capacity was reserved to allow full development of the properties within the Tracy Boulevard Assessment District (as permitted by existing zoning) and to extend sewer service to the North Holly neighborhood. At present, there is no capacity available for additional residential development above and beyond that allocated, and only about 80,000 gpd remain for new commercial, industrial, and high priority users.

¹³For a more detailed discussion of deficiencies in the wastewater treatment system, see CH²M Hill's Engineering Report for the City of Tracy for Wastewater Treatment Improvements, December 1978.

¹⁴Ibid.

Engineering and environmental studies¹⁵ are now complete and the city is proceeding with a three-phase program of plant modifications that will result in: better management of industrial flows, thus lessening pressure on the treatment system and freeing capacity for additional domestic flows; improved maintenance and operating procedures to reduce costs, particularly power; and improved effluent quality to meet the discharge requirements of the Regional Water Quality Control Board.

Water Supply

The city's potable water treatment facilities are on a site adjoining the Tracy Municipal Airport. The water treatment plant began operating in 1979 and has an average maximum daily capacity of 7.5 mgd with a peak hour capacity rate of 10 mgd. Daily use fluctuates between 3.85 and 8.42 mgd during the year, peaking during August and September, and averages 5.81 mgd per day during the year.¹⁶

The primary source of water is the Delta-Mendota Canal, supplemented by local groundwater during peak demand periods. The city has a contract with the Bureau of Reclamation to withdraw up to 3,450 million gallons per year (10,000 acre-feet) from the canal. However, actual usage is only about 2,000 million gallons per year (6,400 acre-feet), or about 64 percent of the actual entitlement. The city could withdraw more from the canal if there were additional treatment capacity at the plant. At full entitlement, the water could support an estimated 32,000 residents.¹⁷

Laura Scudders obtains their water supply from an on-site well rather than from the municipal system. All other domestic and industrial users rely on the municipal system.

The city's water supply system has sufficient capacity to meet present needs, but will need to be expanded as the city grows. In the long-term, the city will need to consider the following expansion needs: providing for additional storage, increasing the plant's treatment capacity, adding to the distribution system, and obtaining more water from the Delta-Mendota canal. A water supply master plan will examine whether existing supplies are adequate for future development and provide for adequate pressure in the system to service the growing southern half of the city.

¹⁵CH²M Hill, 1981 (October). Draft Revenue Program and Financial Plan, City of Tracy Wastewater Treatment Plant Improvements.

¹⁶Blayney-Dyett estimates, based on flow information received from John Baker, Director of Utilities.

¹⁷Blayney-Dyett estimates, based on existing average per capita consumption of 108,100 gallons per year (includes residential, commercial, and industrial customers). This is slightly less than 300 gallons per capita per day, and could be reduced significantly if the share used by "wet" industries declines.

Storm Drainage

A storm drainage master plan is being completed that will use the General Plan land use proposals as a basis for computation. The plan studies will determine how much and where capacity is available in the existing system, what size facilities are needed for future development, and how existing deficiencies can be corrected. As the southern half of Tracy began to develop, the city became aware that its storm drainage system could not handle new flows. Percolation and retardation ponds now are required in each new subdivision; but the ponds are not working well, and the city must develop long-term solutions to its storm drainage problems. To this end, the master plan will include an analysis of the Westside Irrigation District's drainage system and its potential for accommodating Tracy's flows. The city would prefer to share the district's facilities and thus effect a major reduction in new capital facilities.

Another component of the storm drainage master plan will be a study of the potential for coordinating new recreational facilities with the storm drainage system, as has been done in Lodi and Visalia where parks are designed to retain flood water.

Solid Waste Disposal

Tracy's solid waste is transported to a sanitary landfill site on Corral Hollow Road south of the I-580 freeway. Early expansion of this site or development of a new site will be necessary; however, these General Plan studies have not included solid waste disposal needs.

2.7 CIRCULATION

(See the Plan Policies Report, Policy Areas 12, 13, 14, 15, and 16.)

Tracy is part of the major transportation link between the Bay Area and the San Joaquin Valley and Southern California. Three interstate freeways (I-5, I-205, and I-580) form a triangle around the city, making it highly accessible at the periphery and minimizing the need to use city streets for through trips and external trips originating or ending in Tracy. Penetrating this freeway triangle are two railroad systems (Southern Pacific and Western Pacific) with a Southern Pacific junction at the edge of downtown.

Trafficways

Arterial Streets

Using a criterion of minimum average daily traffic (ADT) of 8,000 vehicles, Tracy presently has three full arterials--Grant Line Road, Tracy Boulevard, and Eleventh Street (see Figure 2.2). The lack of continuity in the Tracy street system--offset intersections along Eleventh Street and barriers created by the railroad tracks--forces a high percentage of all trips to use these arterials. The existing signalized network is shown in Figure 2.3.

Tracy Boulevard has been reconstructed with four moving lanes; portions have two-way left turn lanes and islands. Proposals for Eleventh Street include removal of parking on one or both sides to increase the lane widths to 12 feet

or to provide a two-way left turn lane within the existing 56-foot curb-to-curb section.¹⁸ The 1978 Westside Traffic Study recommended widening Eleventh Street to 64 feet, at least west of Tracy Boulevard.¹⁹ Projections prepared by Caltrans in 1980 anticipate a 70 percent increase in traffic by 1995 (29,500 ADT vs. 17,400). (See Table 2.15.)

The city recently completed reconstruction of Grant Line from MacArthur Drive to Tracy Boulevard as two lanes with a continuous left turn lane. Back-up lots and dedication are being required as adjoining land is developed to provide a 100-foot right-of-way with limited access, allowing four or even six moving lanes.

The immediate circulation problem in Tracy is lack of adequate north-south routes, particularly in the eastern half of the city. Of the three main north-south streets--MacArthur Boulevard, Central/Holly, and Tracy Boulevard--only the latter offers a direct connection between both ends of the city. Recent and proposed development to the north and south will concentrate more trips on Tracy Boulevard.

Possibilities for relieving the pressure on Tracy Boulevard as the only north-south arterial include use of Corral Hollow Road as the city grows west and connections of either MacArthur Drive or Chrisman Road between Grant Line Road and Eleventh Street. In addition, Central Avenue is being extended to Schulte Road as part of the downtown revitalization program and is proposed in the General Plan to be extended in a southeasterly direction to Tracy Boulevard.

It does not appear feasible to extend MacArthur Drive west along the west side of the Heinz plant even if the present rail spur were removed because insufficient right of way is available. MacArthur could be extended south of Grant Line by swinging east and then under the Eleventh Street railroad overpass to a "T" intersection with existing MacArthur Drive just north of the railroad. An alternative would be to reopen Chrisman road between Grant Line and Eleventh by bridging over the Southern Pacific car storage area or relocating it and constructing a grade crossing. East-west travel through Tracy is also constrained because Eleventh Street and Grant Line Road are the only continuous routes.

The lack of arterial streets has had an adverse affect on local streets. When the major arterials are congested during the peak period, through traffic tends to circulate through adjacent residential neighborhoods. Although this traffic may not exceed the local streets' technical capacity, it probably surpasses the maximum volume residents perceive as appropriate.

The city has been requiring back-up residential lots along Tracy Boulevard. This solution minimizes pedestrian and vehicle conflicts, expedites traffic flow, and buffers noise; but in many California cities built during the last 20 years, walled arterials have become a visual blight. Landscaping outside the wall often is non-existent or poorly maintained because adjoining property owners who front on another street are unwilling to maintain it. As provided in Policy Area 16, Supplementing Policies 16-3 and 16-4, landscaping must be coordinated with major street improvement plans and means of maintaining the plantings, such as landscape maintenance districts and homeowners' associations, utilized.

¹⁸Engineering Design Services, February 1980.

¹⁹George S. Nolte and Associates, August 1978.

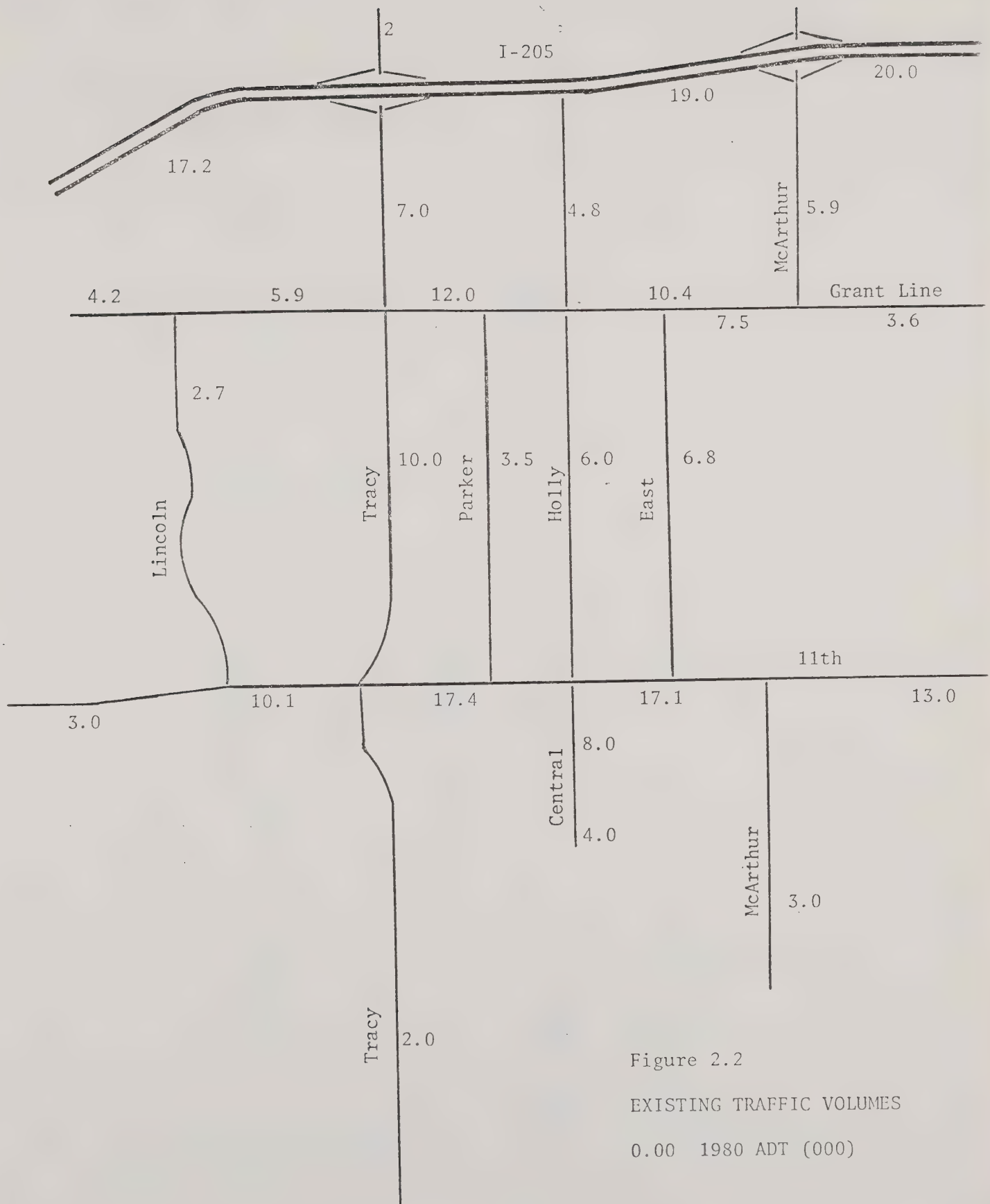


Figure 2.2

EXISTING TRAFFIC VOLUMES

0.00 1980 ADT (000)

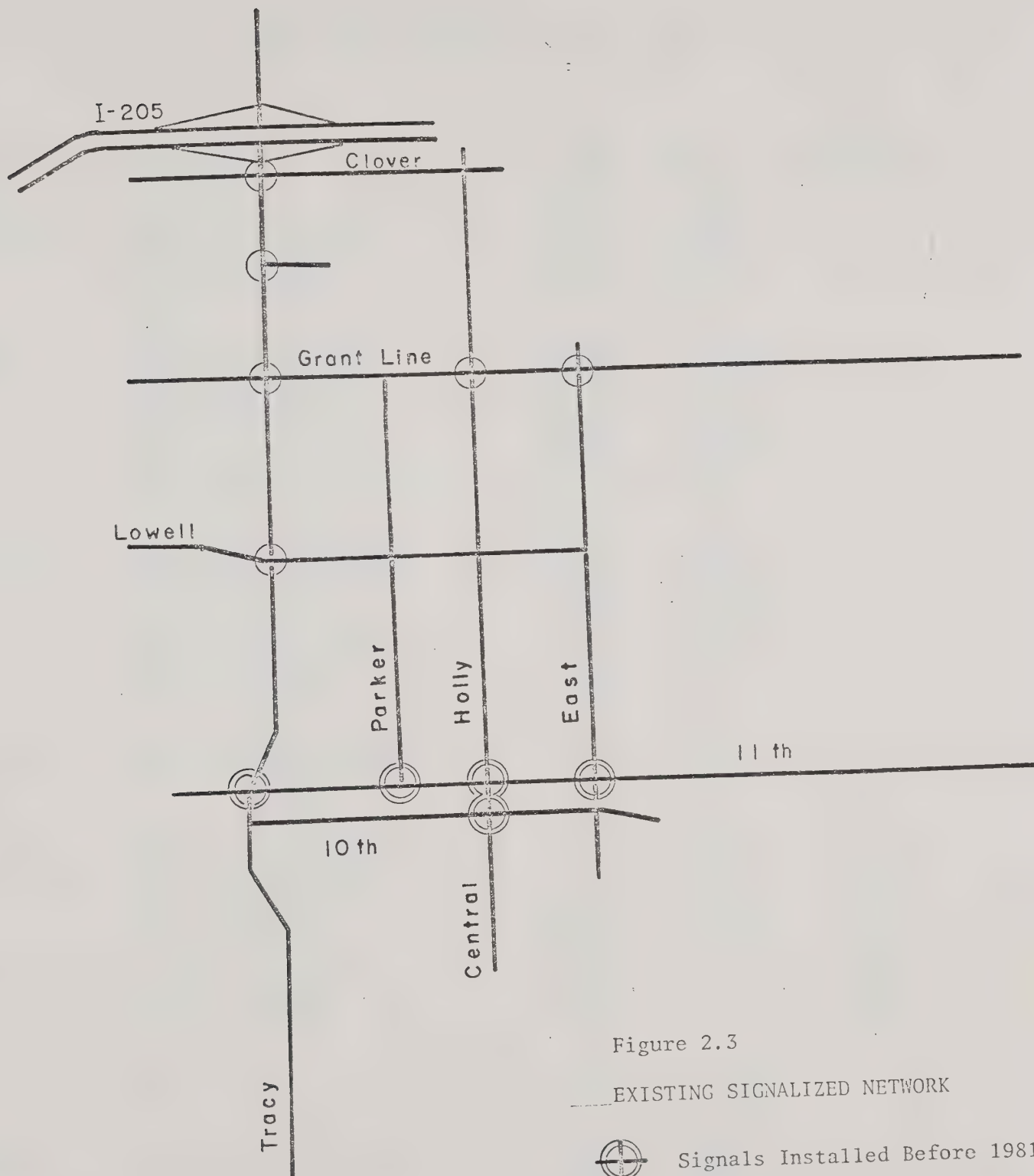





Figure 2.3

EXISTING SIGNALIZED NETWORK

-  Signals Installed Before 1981
-  Signals Installed During 1981 &
-  Signalized Network

Note: Additional signals at major intersections will be considered as needed.

TABLE 2.15
EXISTING AND PROJECTED TRAFFIC VOLUMES

<u>Road</u>	<u>Road Segment</u>	<u>1980 ADT</u>	<u>1995 ADT^a</u>	<u>General Plan Projection^b</u>
I-205 Freeway	Corral Hollow to Tracy Blvd.	17,200	26,500	
	Tracy Blvd. to Holly	19,000	29,500	
	Holly to MacArthur	19,000	32,500	
	East of MacArthur	20,000	32,500	
Grant Line Road	I-205	4,200	8,000	
	Lincoln to Tracy Blvd.	5,900	13,500	
	Tracy Blvd. to Parker	12,000	20,000	
	Parker to Holly	12,000	20,000	
	Holly to East Street	10,400	16,000	
	East Street to MacArthur	7,500	10,500	
	East of MacArthur	3,600	5,000	
Eleventh Street	Corral Hollow to Lincoln	3,000	7,000	
	Lincoln to Tracy Blvd.	10,100	17,000	
	Tracy Blvd. to Parker	17,400	29,500*	
	Parker to Holly	17,400	29,500*	
	Holly to East Street	17,100	25,000*	
	East Street to MacArthur	17,100	27,000*	
	East of MacArthur	13,000	19,000	
Corral Hollow Road	North of I-205 Freeway		3,000	
	Grant Line to Eleventh		4,000	16,000
	South of Eleventh		3,000	16,000
Tracy Boulevard	North of I-205 Freeway	2,000	7,000	
	I-205 to Grant Line	7,000	12,500	18,000
	Grant Line to Lowell	10,000	18,000	20,000
	Lowell to Eaton	10,000	16,000	18,000
	Eaton to Eleventh	10,000	17,000	18,000
	Eleventh to Fourth	2,000	6,000	15,000
	Fourth to Valpico	2,000		15,000
	Valpico to Linne	2,000		10,000
	South of Linne	2,000		6,000
Parker Avenue	Grant Line to Eaton	3,500	3,500	
	Eaton to Eleventh	3,500	5,000	
Holly Drive	North of I-205 Freeway	4,800	4,000	
	I-205 to Grant Line	6,000	4,000	
	Grant Line to Lowell	6,000	8,000	
	Lowell to Eaton	6,000	8,000	
	Eaton to Eleventh	6,000	10,500	

*NOTE: Additional traffic improvements must be made to provide for these traffic volumes.

TABLE 2.15
EXISTING AND PROJECTED TRAFFIC VOLUMES
(Continued)

<u>Road</u>	<u>Road Segment</u>	<u>1980 ADT</u>	<u>1995 ADT^a</u>	<u>General Plan Projection^b</u>
Central Avenue	Eleventh to Ninth Streets	8,000	14,000	
	Ninth to Third Streets	4,000	14,000	
	Third Street to Schulte Road			12,000
	Schulte Road to Tracy Blvd.			10,000
East Street	Grant Line to Eleventh	6,800	8,500	
	Grant Line to Lowell		8,500	
	Lowell to Eleventh		12,500	
MacArthur Drive	I-205 to Grant Line	5,900	8,100	
	Grant Line to Eleventh (proposed)			15,000
	South of Eleventh	3,000	8,500	
Lowell Avenue	Tracy Blvd. to East		2,000	
Fourth Street	Tracy Blvd. to Central Ave.		1,000	
Third Street	Central to MacArthur		2,500	
Schulte Road	Tracy Blvd. to MacArthur			10,000
	MacArthur to Chrisman			10,000
	West of Tracy Blvd. (proposed)			10,000
Linne Road	West of Tracy Blvd.			8,000
	Tracy Blvd. to Chrisman			8,000
Chrisman Road	Eleventh to Schulte			10,000
	Schulte to Valpico			10,000
	Valpico to Linne			10,000

^aCaltrans, 1981 (1995 projections are derived from computerized gravity model using a network and socioeconomic data substantially different than the General Plan).

^bProjected using development proposals of General Plan where current volume is negligible. Purpose of projections is to determine right-of-way width and noise impacts only.

Central Avenue will be extended to Schulte Road and Sixth Street will be realigned and reconstructed as part of the downtown revitalization program. These projects will improve access to downtown, particularly from the rapidly growing areas to the south, and improve general circulation for the 3,500 people who live in the immediate area.

Collector Streets

Streets classified as collectors carry between 2,000 and 5,000 average daily traffic. These and other streets carrying slightly lower volumes are selected by drivers because they are continuous, serve major adjoining destinations, or are a certain distance from an arterial. In some cases, these streets were designed to serve only local traffic and thus occasionally experience congestion and delays.

Tracy's system of collector streets presently is functioning adequately, although future growth is likely to strain capacity at certain points. Traffic concerns that may need to be addressed in the future include how best to balance improved vehicular access and circulation in downtown while encouraging pedestrian movement. Both are necessary for revitalization, but they easily can conflict unless carefully designed. For example, a system of one-way streets or additional parking may enhance vehicular flow but may deter walking past parking lots or across streets carrying fast traffic.

Parking

In coordination with the downtown revitalization program, a Parking Committee composed of property owners and representatives of the City and the Downtown Improvement District (DID) commissioned a parking survey in 1980 to determine how many spaces were available, how many were needed to support existing retail businesses, and how many could be provided on remaining vacant land. The survey, covering a 12-block area bounded by Eleventh, E, Sixth, and A Streets, counted 631 off-street and 446 on-street spaces. Using the minimum parking requirements of the zoning ordinance (One space for every 100 square feet for restaurants and one space for every 350 square feet of general commercial), there now exists a shortage of 8,058 parking spaces. The deficit is greatest (over 300 spaces) in the block west of Central Avenue between 10th and Eleventh Streets, where the Tracy Inn is located. In addition, some of the available spaces are located in alleyways and are unmarked, unimproved, dark, possibly considered unsafe, and consequently underused.

A parcel-by-parcel review of the 12-block area evaluated the potential for new spaces, assuming that a minimum number of buildings would be removed. Based on the study, there appears to be room for an additional 677 parking spaces in the downtown area. Although the downtown would still be 377 spaces short, the additional spaces would increase the supply by over 60 percent. Cost of the new parking spaces was estimated to be \$1.25 million. A preliminary study was conducted to determine the feasibility of an area-wide assessment district. It was determined by the Parking Committee that the resulting assessments could not be supported under present economic conditions. The Committee proceeded, therefore, with a block-by-block parking improvement program involving the leasing of land, construction financing by property owners, and maintenance financing by businesses through formation of a Parking District.

Truck Routes

Existing truck routes are:

- Eleventh Street
- Sixth Street east of Tracy Boulevard
- B street from Sixth to Eleventh
- Tracy Boulevard
- Fourth Street west of Central
- Third Street east of Central
- MacArthur Drive
- Grant Line Road
- Schulte Road
- Central from Sixth to Third

Because heavy trucks are major noise generators and create an environment that is unpleasant for bicyclists and pedestrians as well as automobile drivers, General Plan circulation studies have sought to relocate truck routes out of the center of the city where possible. If trucks are routed on streets and rural roads that presently do not have much adjoining development, standards can be applied that will mitigate nuisances (see Noise Element).

The intent of the truck route proposals presented in Section 2.4 of the Plan Policies Report (a part of the Circulation Element), is to serve all truck destinations by reasonably direct routes that are least detrimental to other traffic and adjoining development. Trucks would, of course, use local streets as necessary to make deliveries to addresses not located on a truck route.

Railroads

Rail service is provided by the Western Pacific and Southern Pacific Railroads. Light use of all but two of the five lines makes rail traffic less disruptive to automobile traffic and adjoining land uses than the map suggests (Table 2.16). An agreement that will allow Southern Pacific trains to run on the Western Pacific track will leave the Altamont line as a spur serving the Owens-Illinois Glass Container Division west of the Tracy General Plan area. Traffic on the Western Pacific line may increase, but its location creates minimal disruption for Tracy.

Previous Tracy General Plans have proposed construction of railroad grade separations. Each such separation now costs \$2 million or more. Most crossings that have been built in California cities have used grants from the State Public Utilities Commission and railroad contributions along with city funds. No major conflicts are identified as requiring the construction of major grade separation structure; however, if the combination of warrants for a grade separation, or separations, are satisfied as part of future studies, appropriate applications for funding assistance should be pursued. Provision of an adequate level of safety protection within the community must be considered for emergency vehicles, in which case grade separations are necessary.

TABLE 2.16
RAIL TRAFFIC VOLUMES

<u>Rail Line</u>	<u>Trains Per Day</u>
WP mainline	10-15
SP Tracy-Lathrop (NE)	8
SP Tracy-Martinez (NW)	2
SP Tracy-Altamont (SW)	1
SP Tracy-Patterson (SE)	1

Source: Western Pacific and Southern Pacific
Railroads, October 1981.

Bicycles

(See the Plan Policies Report, Policy Area 15.)

In the early 1970s, many cities prepared elaborate communitywide plans of bike routes, bike lanes, and separate bike paths. In subsequent years, bikeway designers have learned that differences in the level of skills, aggressiveness, and riding sophistication of bicyclists affect the types of facilities needed. Bicyclists who travel long distances through and across town tend to be fairly skilled and sophisticated riders. Less sophisticated, less aggressive, and less skilled riders appreciate and need special bicycle facilities, but their sphere of riding activity tends to be much more localized.

Tracy is composed primarily of residential neighborhoods with safe, quiet streets. Most streets are wide enough to accommodate both cars and bikes without having to separate the two, and people should be allowed to ride throughout the community and not be channeled to specific streets. Bike paths in the greenways will serve recreational bicyclists. Sidewalks on heavy traffic streets also can be designated for bicycle use where pedestrian traffic is light.

Development of plans for bike routes and bikeways will be undertaken in the future.

Transit

(See the Plan Policies Report, Policy Area 14.)

For a city of its size, Tracy has made a substantial commitment to public transit. It subsidizes both a dial-a-ride bus and a taxi service, spending over \$200,000 on these two systems during 1980. The City of Tracy operates a demand-responsive transit system with four vans, two of which are equipped with wheelchair lifts. Tracy Trans operates from 7:00 a.m. to 7:00 p.m. on Mondays through Fridays and from 9:00 a.m. to 6:00 p.m. on Saturdays. The transit system began in 1976 as a joint venture between the City of Tracy and Good Samaritan Community Services of San Joaquin County; but now, due to lack of funds, the system is operated by the city alone. Although the goal of the system is to provide transportation to all residents of Tracy, special emphasis is placed on the needs of the disabled and the elderly. Daily average

ridership has risen from about 160 in 1977 to more than 250 passengers in 1980, resulting in capacity problems at peak operating hours. As a consequence, the time needed to respond to a passenger's request for service and to deliver him to his destination has increased. Tracy Trans is used for a variety of purposes, primarily for trips to downtown, to work, and to senior programs. There are no plans at present to expand the system by adding vans, increasing hours of operation, or establishing a fixed-route service.

Tracy Trans is financed through a combination of state gasoline tax subventions, grants from the U. S. Urban Mass Transportation Administration, contributions from San Joaquin County, Transportation Development Act funds, and fare box revenues. The percentage of operating costs recovered from the fare box has increased from about 10 to 30 percent in the last four years. However, proposed cutbacks in the federal budget make it likely that Tracy will eventually rely almost completely on gas tax revenues to subsidize its transit system. As gas tax revenues are also the primary source of funds for roadway, traffic, and circulation projects, the city may be faced with deciding between maintaining its transit system or its streets.

Tracy also subsidizes a taxi service, which began operating in September 1980, through a combination of demonstration projects and special assistance grants from Caltrans. The city has contracted with a private company from Modesto to operate two cabs in Tracy, available on an average of 20 hours a day. The city pays the taxi service with a flat monthly fee and reimburses three-quarters of the fare of elderly and handicapped riders.

2.8 AIR TRANSPORTATION

(See the Plan Policies Report, Policy Area 13.)

The Tracy Municipal Airport, 3.5 miles south of the city, encompasses 307 acres and has two 4,000-foot runways, one lighted with medium intensity lights to F.A.A. standards and two VASI landing systems. An airport master plan was prepared in 1975. Since 1975, two runways were reconstructed; runway aprons were built; the tetrahedron and segmented circle were reconstructed at new locations; the two VASI systems were installed; and new fueling facilities installed. The city presently is completing acquisition of the airport clear zones, and will soon reconstruct and enlarge the tie-down area and fence the airport.

The master plan was revised in 1981 to provide a specific plan for the airport. The specific plan includes a detailed layout of the site and its future facilities, including the location of hangars, parking lots, tie-downs, fixed-base operations, and roads. The 1982-83 Capital Improvements Program allocated \$72,000 for clear zone acquisition and \$550,000 for other improvements using federal matching grants.

3.0 HOUSING ELEMENT

3.1 INTRODUCTION

This section contains detailed analyses of housing needs and constraints, and outlines five-year housing needs. Housing policies and implementation actions are in Section 3 of the Plan Policies Report. Quantified objectives are presented in the Plan Policies Report at the level deemed realistic and capable of implementation.

The Housing Element is intended to meet all requirements of California Government Code Section 65580 et seq. The following matrix lists statutory content requirements and the section(s) of the Housing Element (or other General Plan elements) that address those requirements.

Abbreviations: PPR = Plan Policies Report
TSP = Technical Supplement

<u>Statutory Requirement</u>	<u>Location</u>
(1) Analyses of population and employment trends.	TSP, Sections 1.0, 2.2, and 2.3
(2) Analyses and documentation of existing projected housing needs for all income levels.	TSP, Section 3.2.1
(3) Inventory of land suitable for residential development.	TSP, Sections 2.1 and 3.3.3
(4) Analyses of the relationship of zoning and public facilities and services to suitable sites.	TSP, Sections 2.1 and 3.3.3
(5) Analyses of governmental restraints.	TSP, Section 3.3
(6) Analyses of non-governmental restraints.	TSP, Section 3.3.1
(7) Analyses of special housing needs.	TSP, Section 3.2.2
(8) Analyses of energy conservation opportunities.	TSP, Sections 3.3.4 and 4.1.6
(9) Statement of policies, implementation actions, and quantified objectives.	PPR, Section 3 TSP, Section 3.4

In addition to the statutory content requirements of the Housing Element, an analysis of the housing characteristics of Tracy's housing stock can be found in Section 1.7 of the Technical Supplement.

3.2 HOUSING NEEDS

(See the Plan Policies Report, Policy Area 20.)

3.2.1 The Affordable Housing Issue

Introduction. While there is general agreement among builders, bankers, elected officials, and citizens that a housing affordability problem exists, defining the nature and severity of the problem is difficult. Specific, up-to-date data on housing need and ability to pay are not available, although the 1980 census will provide somewhat better data when published in 1982. Current interest rates, if assumed to prevail, make affordability questionable for most first-time buyers, including those with incomes well above the median.

Personal income rose faster than housing costs during the first half of the 1970-80 decade, but housing costs increased more rapidly during the second half-- accelerating at the end. Although price increases in Tracy have been less extreme than in California's coastal metropolitan areas, monthly payments for a newly purchased median value home have increased from less than 20 percent of median income to more than 40 percent. The average sales price of Tracy homes sold in 1980 was \$72,442, resulting in monthly payments of \$840, assuming 25 percent down, 18.5 percent interest plus 4 points, and a 30-year mortgage. First-time buyers unable to make a large down payment and using an FHA loan would have monthly payments over \$800 for a \$65,000 home, the least expensive new home available in Tracy in 1981.

Average rents in Tracy, as surveyed in 1981 by the San Joaquin County Council of Governments, were \$265 for multi-family units and \$440 for single-family units. Average rentals appear "affordable" for households allocating 25 percent of income for housing and having less than the \$24,200 median income estimated for San Joaquin County.

Affordable Housing: A General Definition. The basic standard applied by state and federal agencies to assess affordable housing needs measures the relationship between family income and monthly housing costs. In general, the standard states that no family should pay more than 25 percent of gross income for all housing costs including principal and interest, taxes, insurance, repairs, utilities, and homeowners association fees (California Health and Safety Code, Sections 50052.5 and 50053). While in practice this standard is modified somewhat according to family size and housing tenure, it remains the basic criterion for measuring affordability needs.

To assess family income in relation to the affordability criterion, the California Department of Housing and Community Development (HCD) has defined four income levels:

<u>Income Level</u>	<u>Definition</u>
Very low	Annual gross income less than 50 percent of county median
Other lower	Annual gross income less between 51 percent and 100 percent of county median

Moderate Annual gross income between 101 percent and 120 percent of county median

Above moderate Annual gross income above 120 percent of county median

The U.S. Department of Housing and Urban Development (HUD) estimated the July 1, 1981 median income of families in San Joaquin County at \$24,200. This figure yields the income levels shown in Table 3.1 and the range of rents or housing payments that are considered affordable under the 25 percent criterion.

TABLE 3.1
1980 INCOME LEVELS AND AFFORDABLE
RENTS/PAYMENTS: CITY OF TRACY

<u>Income Level</u>	<u>Annual Gross Income</u>	<u>Monthly Gross Income</u>	<u>Affordable Rent/Payment</u>
Very low	Less than \$12,100	Less than \$1,008	Less than \$252
Other lower	\$12,101-24,200	\$1,009-2,017	\$253-504
Moderate	\$24,201-29,040	\$2,018-2,420	\$505-605
Above moderate	More than \$29,041	More than \$2,421	\$606 and up

The San Joaquin County Planning Department has prepared estimates of the proportion of Tracy households in each income category. These estimates, which are adjusted for family size, are presented in Table 3.2. Affordable monthly rents/payments are given for two typical monthly incomes at each level. For illustrative purposes, data from the rental housing survey (conducted in September and October of 1981) are also shown.

Table 3.2 indicates that Tracy's rental housing market is reasonably accessible to all except the very low income level. If the rental housing survey provides an accurate picture of the Tracy rental market, then roughly 60-90 percent of the rental housing stock is affordable for 77 percent of Tracy's households. The rental market is not so hospitable to very low income households, with less than 25 percent of the units surveyed available at affordable rents. However, if a very low income household earning the maximum \$12,100 income chooses to devote 30 percent (\$302) of its monthly income to rent, 36 percent of the Tracy rental market is affordable. Despite this improvement, very low income households living without subsidy are still underserved by the Tracy rental market, particularly those who need two or more bedroom units.

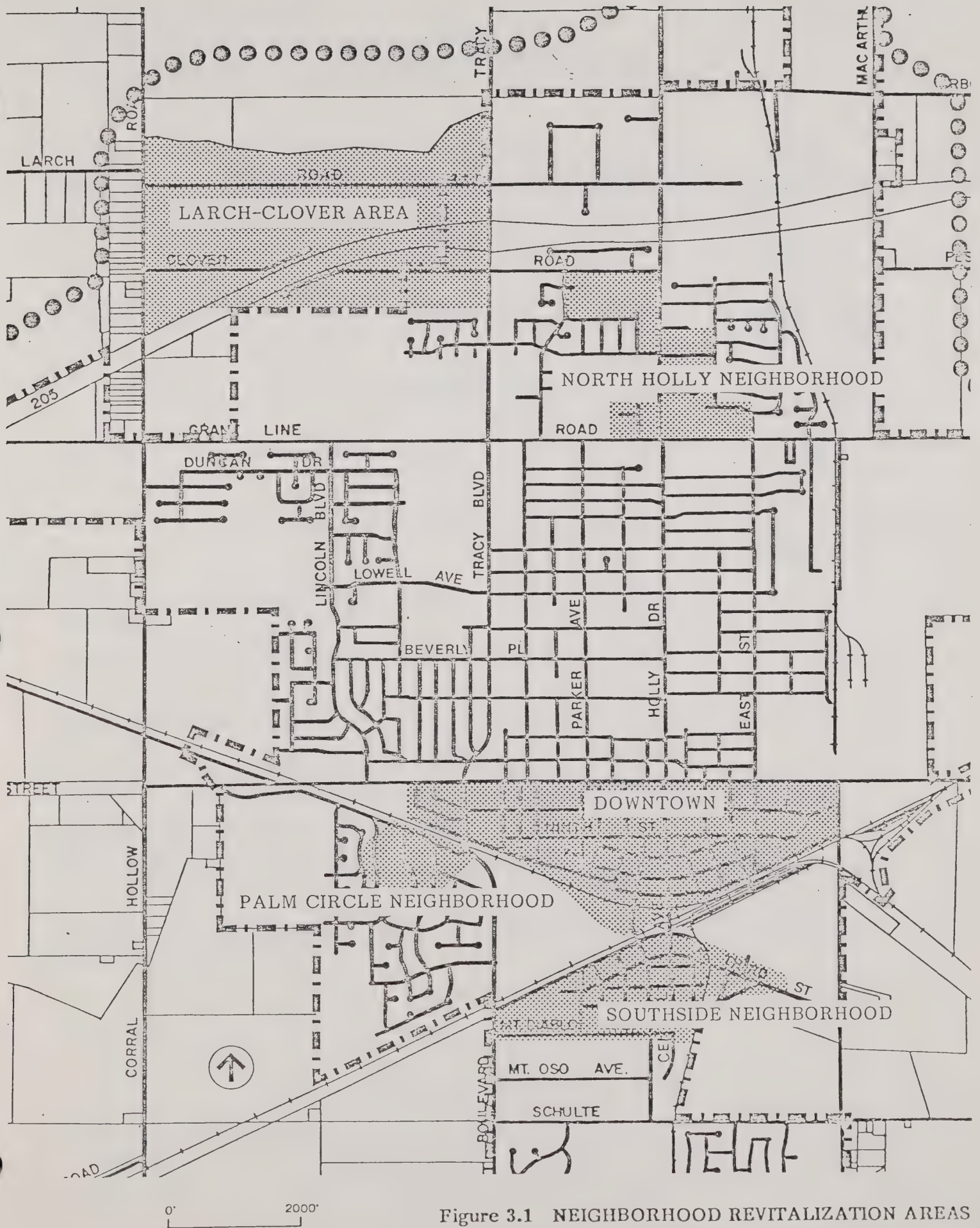


Figure 3.1 NEIGHBORHOOD REVITALIZATION AREAS

TABLE 3.2
INCOME LEVELS, AFFORDABLE RENTS,
AVAILABLE RENTS, 1980: CITY OF TRACY

<u>Income Level</u>	<u>Tracy Households^a</u>	<u>Affordable Monthly Rent</u>	<u>Available Rentals (%)^b</u>	<u>Rental Description</u>
Very low	1,530 (23.0)	\$140 ^c \$252 maximum	2.0 24.0	Studio Studio & 1 & 2 bdm. apts. only
Other lower	1,330 (20.0)	\$378 ^d \$504 maximum	68.0 94.0	2 & 3 bdrm. homes; studio to 4 bdrm. apts. 2 to 4 bdrm. homes; all apts.
Moderate	1,400 (21.0)	\$555 ^d \$605 maximum	96.0 96.0	To 4 bdrm. homes; all apts. 2 to 4 bdrm. apts. and town- houses
Above Moderate	<u>2,400</u> (<u>36.0</u>)	\$606	<u>96.0</u>	e
TOTALS	6,660 (100.0)		100.0	

Note: All numbers rounded.

^aPercent of all households.

^bPercent of all rental units surveyed, availability based on contract rent only.

^c40-hour week at federal minimum wage of \$3.35/hr.

^dMid-range values.

^eAt annual income of \$32,400, entire rental stock surveyed is affordable.

Source: San Joaquin County Council of Governments. Survey of Tracy Rental Housing. September-October 1981.

Existing Assisted Housing. Over the years, Tracy has made use of housing subsidy programs. The subsidized portion of Tracy's housing stock is well above the national average and represents a larger share than in other San Joaquin County cities.

<u>Program</u>	<u>Description</u>	<u>Number of Units</u>
Conventional Public Housing	Provides family housing for very low income households; owned and operated by San Joaquin County Housing Authority	195
Section 8 (Existing Housing)	Provides rent subsidies to low income households occupying privately owned units	63
Section 221(d)(4)	Subsidizes mortgage interest rates for multi-family housing occupied by low and moderate income households	40
Section 236	Subsidizes mortgage interest rates for multi-family housing occupied by low and moderate income households	160

The total number of existing assisted housing units is 6.4 percent of Tracy's housing stock. The existing affordable housing need estimated below is in excess of that met by this supply.

Existing Need for Affordable Housing. While some of the city's 4,260 low to moderate income households are occupants of assisted housing or long-term owner-occupants of relatively low cost, single-family housing (i.e., homes purchased with pre-1975 low interest mortgages), newer residents at the "very low" and "other lower" income levels have been priced out of the ownership sector. When these families (especially those with children) attempt to find rental housing, they encountered a limited supply of affordable multi-bedroom units.

The best available estimate of existing affordability needs was prepared by the San Joaquin County Council of Governments and published in its 1981 Housing Element. It provided the following data on households earning less than 80 percent of the county median income and paying 25 percent or more of gross household income for shelter:

	<u>Owners</u>	<u>Renters</u>	<u>Total</u>
City of Tracy	353	572	925
Tracy Planning Area	490	790	1,280

State law (California Government Code, Section 65584) requires the city to address the housing needs "of persons at all income levels within the area significantly affected by a jurisdiction's General Plan." Since an estimated 667 households reside outside the current city limits but inside the General Plan area, Tracy's proportionate share of planning are need can be calculated by assuming the same

percentage need that exists in the unincorporated portion of the General Plan area as in the planning area as a whole. This yields the following adjusted level of need:

	<u>Owners</u>	<u>Renters</u>	<u>Total</u>
Tracy General Plan Area ²⁰	392	631	1,023

Projected Need for Affordable Housing. State law also requires communities to assess the locality's share of regional housing need, and directs local Councils of Governments (COG's) to determine projected needs for affordable housing (California Government Code, Sections 65583 and 65584).

San Joaquin County COG released a review draft of projected housing needs by income level in November 1981. In order to meet projected needs, the COG estimated that the following percentages of new housing constructed in Tracy between 1982 and 1986 would be required for each income level:

Very low income	26.5%
Other lower income	19.4%
Moderate income	20.0%
Above moderate income	34.1%

The COG's estimate of total 1982-1986 housing needs was 2,390 units (2,270 new, 120 replacement),²¹ based on an increase in total households of 2,270. The projection prepared for the Tracy Housing Element is 2,430 units (2,310 new, 120 replacement), based on an increase in total households of 2,310. (This figure is slightly higher than the COG's due to differing assumptions about vacancy, household size, and overall growth rate.)

The Tracy Housing Element projections are controlled by the population projections in Table 1.2 and assume that new residents will have the same economic characteristics as current residents. Housing market conditions or lack of local jobs could cause a lower growth rate. If jobs held by new residents raise the median income, the need for affordable housing will be less.

Table 3.3 presents target needs. It assumes that the housing stock will be allocated so that households now overpaying will relocate to new or existing affordable units and that the units they now occupy will be available for households with higher incomes. If these targets were to be met, Tracy would need to add 462 units per year during the next five years, but only 98 of these would be for households exceeding moderate income.

²⁰14.7% of planning area households in need; 38.3% owners and 61.7% renters. Planning area percentages applied to estimated number of occupied households in unincorporated portions of the General Plan area (668 households), and added to City of Tracy needs.

²¹The COG prepared estimated needs for 1980-81, but these were not used because that time period has elapsed. Sales and rent data for units actually constructed between 1980 and 1981 should be analyzed by Tracy to determine the number of units actually provided at each income level. Projected annual needs should be revised.

TABLE 3.3
UNITS REQUIRED TO MEET HOUSING NEEDS OF EXISTING
AND NEW HOUSEHOLDS, BY INCOME LEVEL: 1982-86

Column	1	2	3	4	5	6	
	Existing Households with Affordability Needs: 1981 ^a	Projected Replacement Need: ^b 1982-86	Net Affordable Housing Needs: Existing Households ^c	Projected New Households by Income Level: 1982-86	New House- holds Occupying Existing Stock: 1982-86 ^e	New Replacement	Total Units by Income Level: 1982-86 ^f
Very Low	512	110	402	610	0	1,012	1,122
Other Lower	511	10	501	450	301	650	660
Moderate	0	0	0	460	301	159	159
Above Moderate	0	0	0	790	301	489	489
TOTAL	1,023	120	903	2,310	903	2,310	2,430
							462

^aNumbers per San Joaquin County COG; distribution estimated.

^bNumbers and distribution per San Joaquin COG; these are units not suitable for rehabilitation.

^cColumn 1 minus Column 2. Assumption: Replacement units built will be occupied by existing needy households, reducing level of existing need.

^dPer San Joaquin County COG.

^eAssumption: Households in Column 3 are currently overpaying. They will relocate to new housing affordable to very low and other lower income households. Units vacated by these households will be occupied by new Tracy households in upper three income categories. Distribution among categories assumed to be equal.

^fColumn 3 plus Column 4 minus Column 5. Although replacement units reduce existing need from Column 1, they still represent a need for housing construction, and thus must be added to the "new" unit total.

^gTotal needs divided by five years.

3.2.2 Special Housing Needs

(See the Plan Policies Report, Policy Area 21.)

In addition to the widespread problem of housing affordability, some Tracy households also have special housing needs. These include accessibility for the elderly and handicapped, the provision of multi-bedroom units for large families, and prevention of discrimination against minority households.

The San Joaquin County Fair Share Allocation Plan (1979) and Housing Element (1981) supplied the data shown in Table 3.4, which reflect 1980 conditions. The Tracy General Plan area figures are derived by adjusting Tracy planning area figures.

TABLE 3.4
SPECIAL HOUSING NEEDS
OF LOWER INCOME HOUSEHOLDS^a

	<u>Elderly/ Handicapped</u>	<u>Large Family^b</u>	<u>Minority</u>
<u>City of Tracy</u>			
Owner	75	44	139
Renter	395	258	422
Total	<u>470</u>	<u>302</u>	<u>581</u>
<u>Tracy General Plan Area^c</u>			
Owner	85	71	152
Renter	428	262	481
Total	<u>513</u>	<u>333</u>	<u>633</u>

^aHouseholds earning less than 80 percent of county median annual income.

^bFive or more persons.

^cAssumptions for the planning area as a whole, 18.9 percent of all households are estimated to have special needs (6.4 percent elderly/handicapped, 4.6 percent large families, 7.8 percent minority households). Those distributions were assumed to reflect the proportion of special needs households in the unincorporated portion of the General Plan area (667 unincorporated households X .064 = 43 added elderly/handicapped need). Owner/renter distributions were calculated in the same manner.

Elderly Needs. There are currently 20 units of housing in Tracy designated exclusively for occupancy by the elderly with another 84 units of assisted housing occupied by elderly residents. In addition, 75 persons currently occupy Tracy nursing homes, the majority of whom are assumed to be elderly persons. In addition to affordability problems, elderly households may have trouble locating assessible units (i.e., ground-floor units with accessible fixtures), a problem they share with the handicapped population. The social needs of the elderly, including the need to locate housing close to family and friends, are also appropriate concerns of housing policy.

Handicapped Persons. The California Department of Rehabilitation estimates that 13.7 percent of the population of San Joaquin County is handicapped, with 9.8 percent of the population described as "severely disabled." Applying these percentages to Tracy's General Plan area population results in an estimate of 2,805 handicapped persons, of whom 2,006 are severely disabled. While not all these persons have affordability needs, a large proportion can be assumed to require accessible housing (i.e., ground-floor units with accessible fixtures).

Housing that is accessible to the elderly and handicapped is housing with door widths, door sills, and floor space adequate for the maneuvering and turning of wheelchairs, and window latches, light switches, and electrical outlets that are accessible without modifications. These features can be designed into units at minimal cost. Additional improvements such as railings and hand-holds can be added at the time a unit is occupied by an elderly or handicapped person for a cost of between \$300 and \$400. The Mobility Barriers Section of the California Rehabilitation Department is currently proposing legislation that will require all multi-family units to be adaptable for handicapped persons.

Female-Headed Households. The City of Tracy's 1978-81 Housing Assistance Plan identified 507 lower income (less than 80 percent of county median income) female-headed households. Such households frequently need multi-bedroom units.

Minority Households. In addition to the 633 minority households facing affordability problems, there are an estimated 2,694 additional minority households in the Tracy General Plan area that are potential victims of housing discrimination. No data were available during preparation of the Housing Element to confirm or refute the existence of discrimination.

Farmworker Households. Assessing the housing needs of farmworker households within the Tracy General Plan area is difficult due to a lack of current data. The San Joaquin County Planning Department has estimated that there are 6,380 seasonal agricultural workers in the county as a whole (1980), of whom 2,930 are "non-local individuals," or migrants.²² The Planning Department also estimated that there are currently 2.90 workers per migrant family. Based on these data, and subtracting existing migrant farmworker housing units, the County Planning Department established an existing unmet need of 713 housing units. Data collected by the Migrant Education Program of the Tracy School District indicate that 164 farmworker families, of which 70 (42.7 percent) are migrant families, live within district attendance boundaries which include most of the General Plan area.

The San Joaquin County Housing Authority operates three migrant farm worker housing centers, two at French Camp and one near Lockeford. The centers have a combined total of 197 housing units. The Housing Authority estimates that "at least" 500 additional units are required to meet existing countywide needs. However, in allocating projected 1980-86 housing needs by jurisdiction, the COG described the allocation for unincorporated areas as "largely reflect(ing) farmworker housing needs." The allocation provided for unincorporated was 1,308 units of "very low income" housing and 506 units of "other lower income" housing, for a total of 1,814 units.

²²Defined as workers who move more than once a year.

3.2.3 Structural Needs

(See the Plan Policies Report, Policy Area 17.)

Structural needs include repair of substandard units and expansion or reallocation of overcrowded units. Substandard units include all dwellings that do not meet the requirements of the Uniform Building Code or other applicable codes and regulations. Overcrowded units include all dwellings housing more than 1.01 persons per room. The San Joaquin County COG Housing Element (1981), adjusted for the Tracy General Plan area, indicates the following needs:

	<u>Overcrowded Households</u>	<u>Substandard Units</u>
City of Tracy	423	556
Tracy General Plan Area	469 ^a	613 ^b

^aSame methodology as Footnote "c," Table 3.4.

^bSame methodology as above, but applied to General Plan area housing units *7,882) rather than total households.

Overcrowded units are included under the category of structural need in the belief that many overcrowded households can be most efficiently assisted through rehabilitation and/or alteration of existing dwellings. The option of relocating these households to larger housing units is equally valid, but most difficult to implement.

The City of Tracy 1978-1981 Housing Assistance Plan presented data indicating that 21.5 percent of substandard units were not suitable for rehabilitation and thus required demolition. Applying this percentage to 1981 data on substandard units in the Tracy General Plan area, 132 existing substandard units should be demolished.

3.2.4 Special Needs of Selected Neighborhoods

(See the Plan Policies Report, Policy Areas 4 and 17.)

Some neighborhoods within the Tracy General Plan area have needs, in addition to affordable housing, structural soundness, and other issues discussed above, that greatly influence the quality of the residential environment. Problems include:

- lack of public improvements such as water lines, sewer lines, curbs, gutters, sidewalks, and streetlights;
- deteriorating streets and sidewalks;
- poorly aligned streets and inefficient parcel configurations; and
- vacant, unmaintained buildings and lots.

City and county agencies have identified five such neighborhoods, shown on Figure 3.1, within the General Plan area: North Holly, Palm Circle, Southside, downtown Tracy, and Larch-Clover. All these neighborhoods are within incorporated Tracy except for Larch-Clover, most of which is just outside the northerly city limits. Needs and programs in each neighborhood are discussed on the following page.

North Holly is an older neighborhood, recently annexed after being developed in the County, and is characterized by deep lots that have been divided so that many homes do not have street frontage. Until recently, the neighborhood lacked water, sewer, storm drainage, and street lights. In 1975 and 1977, the city received CDBG funds (\$508,000 total) to extend public services. In 1981, the city began promoting the improvement of private properties through its Housing Rehabilitation Loan Program (consisting of low interest loans, deferred loans, and emergency grants) using a portion of 1978 CDBG program funds. The remaining need is for the completion of internal streets to provide access to interior lots.

Palm Circle, built as a portion of an incomplete planned unit development in the late 1960's, became a deteriorated lower-income neighborhood. In 1978, \$365,000 in CDBG grants were received to make physical improvements (street realignment, more street lighting) and to organize and fund a paint program developed as an incentive to private rehabilitation efforts, for which low interest loans were made available. In addition, the neighborhood park area has been improved with additional trees, benches, play equipment, and lights.

Southside, along with Downtown, is the oldest area of Tracy, having been built largely during the late 1800's and early 1900's. In 1979, the city obtained \$465,000 in CDBG funds to reconstruct streets, alleys, and sidewalks; improve MacDonald Park and the South School playfield; and provide lower interest financing for residential rehabilitation (about 60 units). Part of the funds were used to clarify property titles along Fourth Street by removing Congressional Railroad Grant limitations restricting title transfer and borrowing. A remaining need in the area is for sewer, water and storm drainage systems, and street improvements within the area of Mt. Diablo and Mt. Oso Streets.

Downtown Tracy is the focus of the most recently received CDBG grant (\$1.5 million). The downtown neighborhood is characterized by blighted conditions such as deteriorated structures and vacant, unkept buildings and lots. These conditions have deterred individual attempts at residential and commercial improvement and have created an obstacle to the development of assisted housing in the area. The U.S. Department of Housing and Urban Development denied Section 8 New Construction funds for proposed rental housing for the elderly because of unsuitable conditions in the neighborhood. Consequently, the city is conducting a three-pronged downtown revitalization program consisting of: realignment, improvement, and extension of the major neighborhood collector streets (Sixth Street and Central Avenue); expansion of the city's housing rehabilitation program to 100 low and moderate income residences; and rehabilitation of commercial structures through a low interest loan program. Downtown revitalization will be a five-year program, with success dependent in part on the active participation of the private sector.

Larch-Clover is an unincorporated neighborhood bisected by the I-205 Freeway and bounded by Larch Road, the northern city limits, Corral Hollow Road, and Tracy Boulevard (see Figure 3.1). The area contains 144 households, of which 3.5 percent are Black, 28.5 percent are Spanish surname, and 68.0 percent are White. In 1975, 38.8 percent of the area's households were renters and 61.2 percent were owner-occupants. Median family income in 1970 was \$8,924, or 92.9 percent of the countywide median and 90.5 percent of the city median. In 1970, 8.3 percent of area households were making less than half of poverty income, and 22.9 percent of area households were receiving Social Security or other public assistance income.

Larch-Clover neighborhood problems include:

Low Density. The neighborhood's 268 acres are occupied by only 152 single-family units with an average parcel size of 1.26 acres. The neighborhood's 1975 population was 561 persons, with an average household size of 3.82 persons. Underused land makes the per unit cost of urban improvements high.

Housing Condition. A housing condition survey conducted by San Joaquin County in 1972 indicated that 51.6 percent of Larch-Clover's residential structures required either minor or major rehabilitation, while 25.8 percent were identified as requiring replacement. The 1970 census indicated that 60 percent of the area's structures were built before 1950.

Lot Configuration. The long, narrow lots limit opportunities for additional development. A redevelopment program that adds new streets could create additional building sites without disturbing existing homes.

Drainage. The water table in the Larch-Clover area is only 4-6 feet deep. This causes septic systems to fail during wet weather.

The problems outlined above can only be addressed through a coordinated program involving both the county and the city. It will be important to plan a sequence of public improvements so that private investment is both stimulated and maximized. First priority is the drainage problem, which is currently being addressed by a \$5 million county-funded storm drainage program. The county has also budgeted \$300,000 for a Larch-Clover Sewer Study, although this is identified only as a "prospective project" in the county Housing Element (1980). These programs constitute the existing public commitment to revitalization of the Larch-Clover area; their completion is a prerequisite to further action.

3.2.5 Programs for Improving Substandard Housing

The Tracy Fire Department's work program calls for annual home safety inspections of one-third of the city, so each structure is to be inspected once every three years. The city has over 6,000 residential structures (see Table 1.11), and Fire Department statistics indicated that only 414 inspections were made in 1979 and 304 in 1980 (see Table 4.3.10), well under 10 percent per year.

The California Revenue and Taxation Code (Section 17299) provides local governments with a program that can lead to the improvement of substandard residential rental housing. Violations of health, safety, or building codes are reported to the Franchise Tax Board, which then gives the property owner a period of six months to bring the structure into compliance with applicable codes. If compliance is not achieved at the end of this period, the property owner is not permitted tax deductions for interest, taxes, depreciation, or amortization.

3.3 HOUSING CONSTRAINTS AND OPPORTUNITIES

The housing needs identified in Section 2.1.1 pose significant challenges and there are a variety of market and governmental constraints that affect the city's ability to respond to them. However, Tracy does have limited opportunities to influence both private sector actions and the activities of other public agencies and the type, location, and price of housing units constructed within its jurisdiction.

3.3.1 Market Constraints

(See the Plan Policies Report, Policy Area 19.)

The two principal obstacles to meeting housing needs are development costs and the cost of capital. In the past two years, these factors have interacted to slow the pace of housing construction in Tracy, with the number of completed units declining from 378 in 1980 to 109 in the first nine months of 1981.

Development Costs. These costs can vary greatly depending upon unit size, location, and the quality of materials used. However, development costs for all housing types and price categories have been affected by inflation. Tracy building records show that average permit valuation of a single-family home increased 336 percent between 1970 and 1980, from \$15,696 to \$52,737. This rate of change exceeds that of both the City of Stockton (+145 percent) and the county as a whole (121 percent).²³

The impact of development cost increases is illustrated in Table 3.5 for five different housing types. Data presented in this table were obtained from the Construction Analysis Division of Bank of America's San Francisco corporate office, and were adjusted based on discussion with Tracy area builders and representatives of the manufactured housing industry. Table 3.5 shows construction profit and overhead, and site improvement costs to be the most expensive components of Tracy housing costs, with land costs constituting a relatively minor share.

The housing types for which cost breakdowns are provided in Table 3.5 are representative of the types of residential units currently being built in Tracy. While there is little current use of manufactured housing in Tracy except within traditional mobile-home parks (306 existing units), data are provided for illustrative purposes. In addition to the footnotes that accompany Table 3.5, the following assumptions were made:

Conventional Housing

- Meets all Building Code requirements
- Minimal amenities (e.g., no dishwashers, trash compactors, marble tile, etc.)
- No unusual site development problems
- No government construction subsidy

Manufactured Housing (in addition to above)

- Composition shingle roof
- Wood siding

²³Source: San Joaquin County Housing Element (1980).

FOOTNOTES TO TABLE 3.5

Note: All numbers rounded except construction financing.

^aRaw land at \$20,000/acre for single family; \$24,000/acre for multiple family.

^bInfill lot, graded with access to all services.

^cCurb, gutter, sidewalks, grading, etc. at 15% of construction cost.

^dAt 15% of conventional unit construction cost for raw land; includes allowances of \$2,500 for delivery and \$3,500 for foundation.

^eAt 8% of conventional unit construction cost for infill lot; includes allowances of \$2,500 for delivery and \$3,500 for foundation.

^fLabor, materials, and insurance at \$34.75/square foot for single-family units, \$30/square foot for condominiums, and \$28/square foot for multiple-family rentals; garage included.

^gLabor, materials, insurance, and profit at \$27/square foot for manufactured single-family unit, with allowance of \$13.5/square foot for 440-square-foot garage.

^hAt 10% of direct costs; assumes raw land.

ⁱManufacturer designs housing unit; other design costs estimated at 5% of direct costs.

^jAcreage and connection fees.

^kThree bedrooms assumed.

^lTwo bedrooms assumed.

^mIncludes per unit share of estimated fees. For single-family development, fees were assessed for PUD/subdivision, environmental review, and plan checking; for condominium and apartment development, fees were assessed for subdivision, environmental review, and site plan/architectural review.

ⁿAt 18.5%, 4 points plus \$70; 9 months' cost with 1/2 of loan withdrawn at any one time.

^oAt 15% of sales price.

^pIncluded in construction costs.

Increases in development costs also effect the cost of rehabilitating an existing housing unit. Since the scale and cost of rehabilitation depends entirely upon the condition of the individual unit, it is difficult to develop useful estimates. However, for projects in the City of Stockton, the estimated average cost of major rehabilitation ranges between \$16,000 and \$25,000 per unit, or about \$25 per square foot.²⁴

Cost of Capital. The cost of capital, as reflected in market interest rates, affects housing costs in two ways: it determines the cost of construction financing to the builder, and is a major factor in determining the amount of monthly payments or rents required of the purchaser or renter.

The 1981 interest rate for short-term construction financing is 18.5 percent plus 4 points,²⁵ which yields the financing costs shown in Table 3.6. The effect of possible future rate decreases on total cost could range from 2 to 5 percent. For example, if construction loan rates decline to 14.5 percent, with no points, the cost of a nine-month loan for a single-family home (conventional construction) would decrease by \$2,649.

Current interest rates for 30-year home mortgages range from 18.5 percent plus 3 points for a conventional loan to 16 percent plus 5.5 points for FHA and VA mortgages. These rates result in the monthly payments shown in Table 3.6, which are based on the housing costs in Table 3.5. If current interest rates decline by 4 percent, monthly housing payments would decrease to the levels shown in Table 3.7.

Current high interest rates reflect a scarcity of money available to lending institutions for home loan (and other) purposes. A "tight money" situation also results in stricter eligibility requirements for potential borrowers, the charging of points or other fees in addition to interest, and higher down payment requirements. As Table 3.6 indicates, the total initial charges on a conventional loan (single-family home, conventional construction) amount to \$21,950. Although these high initial costs reduce monthly payments, it is unlikely that a buyer who has not previously owned a home would be able to qualify for conventional financing. While a second mortgage might cover part of initial costs, it will substantially increase monthly payments over the first few years of occupancy. Reliance on second mortgage financing in Santa Clara County has led to a 1981 foreclosure rate that is double that of 1980.

For these reasons, the current market for owner-occupied housing in Tracy is highly dependent on FHA and VA mortgage insurance programs. As Table 3.6 indicates, these programs have greatly reduced down payment requirements and provide funds at slightly lower rates of interest. However, the larger amount of principal financed results in the higher monthly payments shown.

²⁴Source: San Joaquin County Housing Element (1980).

²⁵A "point" is equivalent to 1 percent of the total loan amount. The number of points charged by a lending institution reflects administrative costs and the current supply of mortgage money.

TABLE 3.6
ILLUSTRATIVE FINANCING PLANS,
CITY OF TRACY: NOVEMBER 1981

	Single-Family (Conventional) <u>Raw Land</u>		Single-Family (Manufactured) <u>Infill Lot</u>		Condominium (Conventional) <u>Raw Land</u>	
	\$80,275		\$57,975		\$56,230	
	<u>Down +</u> <u>Fees</u>	<u>Monthly</u> <u>Payment^c</u>	<u>Down +</u> <u>Fees</u>	<u>Monthly</u> <u>Payment^c</u>	<u>Down +</u> <u>Fees</u>	<u>Monthly</u> <u>Payment^c</u>
Conventional Loan (18.5% + 3 points) ^a	\$21,950 ^d	\$932	\$15,873 ^d	\$673	\$15,398 ^d	\$653
Variable Rate Loan (17% + 2 points) ^a	21,348 ^e	858 ^f	15,438 ^e	620	14,976 ^e	601 ^f
FHA Loan (203b) (16% + 5.5 points) ^b	4,665 ^g	1,032	3,232 ^g	747	3,120 ^g	725
VA Loan (16% + 5.5 points) ^b	3,926 ^h	1,042 ^g	2,494 ^h	757	2,382 ^h	735

^aBuyer pays points.

^bSeller pays 4 points; 4 units per structure maximum.

^c30-year financing.

^d25% down, 3 points, \$75 fee for documents.

^e25% down, 2 points, \$75 fee for documents.

^fInitial 17% rate will be adjusted twice a year based on changes in rates for U.S. Treasury bills.

^gDown payment on 3% of first \$25,000, 5% of balance.

^hNo down payment on first \$25,000, 5% of balance.

TABLE 3.7
ILLUSTRATIVE MONTHLY PAYMENTS ASSUMING
4 PERCENT REDUCTION IN PREVAILING INTEREST RATES

	Single-Family (Conventional) <u>Raw Land</u>	Single-Family (Manufactured) <u>Infill Lot</u>	Condominium (Conventional) <u>Raw Land</u>
Sales Price	\$80,275	\$57,975	\$56,230
<u>Loan Type</u>			
Conventional ^a	\$737	\$532	\$516
Variable Rate ^b	666	481	467
FHAC ^c	790	572	555
VAC ^c	797	579	562

^a14.5%

^b13%

^c11.5% plus 0.5% FHA insurance.

The lending industry has developed several innovative loan programs in response to these conditions:

Variable rate mortgages are loans where the lender is allowed to raise or lower the interest rate to reflect fluctuations in the mortgage market. Current initial interest rates are lower than those for conventional loans but higher than those for FHA insured loans (see Table 3.6).

Graduated payment mortgages (e.g., FHA 245) are loans for which the initial monthly payments are reduced to approximately 70 percent of the level normally associated with FHA loans. The payments are then increased by 7.5 percent per year over five years before leveling off. While providing a reduced initial monthly payment, this type of loan results in larger monthly payments over the 25-year balance of each loan than alternative FHA Programs.

Shared appreciation mortgages are loans offered by lenders at substantially reduced rates in exchange for a share the appreciated value of the unit upon resale.

A telephone survey of six local lenders found that savings and loan institutions are not currently offering residential mortgages of any type. Under "normal" conditions, these lenders offer conventional single-family mortgages and a limited number of FHA plans for one to four family dwellings. Tracy banks are currently active in the residential sector, with all four contacted offering conventional loans and FHA/VA financing for single-family homes. Two local banks contacted offer variable rate plans and one offered the FHA 245 Graduated Payment Plan (at 15.5 percent plus 5 points, buyer pays points). The shared appreciation mortgage is the most recent development in home financing, but is not yet offered by any of the local lending institutions contacted.

The preceding discussion has focused on issues related to home purchase. The rental housing sector is also affected by the cost of capital to prospective buyers. In the case of the illustrative rental project costs shown in Table 3.6, the impact of financing costs on rents is as follows:

Development Costs ^a	\$34,435
Down and Fees ^b	11,445
Amount to be Financed	24,105
Annual Mortgage Payment ^c	4,596
Minimum Monthly Rent ^d	589

^aAssumes developer will operate rental units.

^b30% down, 4 points, plus \$150 fee.

^cAt 19%, 30 years (conventional financing).

^dAssumes debt service equals 65% of required revenue; no initial return on equity.

If the rate used above were reduced to 12 percent, with all other assumptions held constant, the minimum monthly rent would be \$381, a 35 percent reduction.

Current high interest rates have had an extremely negative effect on rental construction, with the number of completed multi-family units in Tracy declining from 65 in 1980 to 36 in the first nine months of 1981. (A large share of these multi-family units were condominiums designed for owner occupancy.) This situation is reflected in the policies of local lending institutions. Only one local bank currently offers rental unit financing of any kind, and that plan entails conventional financing at 19 percent plus 4 points. Another local bank has completely eliminated its multi-family loan division, as there was insufficient loan activity to justify continued operation.

Based on the preceding discussion, provision of new, affordable housing units in Tracy is dependent on a reduction in prevailing rates of interest (see Table 3.7). When down payment and fee requirements are considered, the monthly payments/rents required for the examples in Table 3.6 exceed the affordable payment criteria for most low to moderate income households in Tracy. While smaller units could be constructed, the savings realized are not great. For example, a 900-square-foot manufactured, single-family unit on an infill lot would require monthly payments of \$626 (FHA financing at 16 percent), while a 600-square-foot rental unit would require a minimum rent of \$418 (same assumptions as Table 3.5; conventional financing at 19 percent). Although these levels of payments/rents are within reach of moderate income households, they do little to assist very low and other lower income households.

3.3.2 Manufactured Housing Opportunities

(See the Plan Policies Report, Policy Area 19, and the Technical Supplement, Sections 1.7, 3.3.1, and 3.5.4.)

Manufactured housing, including mobile homes, modular homes, panelized and precut housing, offers significant opportunities for reducing housing costs. The various forms of manufactured housing can be described as follows:

Mobile Homes are built on steel substructure; are towable; have removable axles, may be remounted on axles and moved; must meet HUD standards for mobile homes.

Modular Homes are built on wooden substructures; are generally transported on trucks; are not movable after installation; must meet Uniform Building Code standards.

Panelized Homes consist of a package of precut lumber; purchaser assembles or pays for assembly; must meet Uniform Building Code standards.

The manufactured home used as an example in Table 3.5 is a modular unit. As the cost breakdown in Table 3.5 indicates, this type of unit can be placed on a lot in Tracy at a savings of 22.5 percent over conventional single-family construction (assuming development on raw land). Much modern manufactured housing is indistinguishable from single-family conventional housing after installation. Because modular units of any size can be built for approximately the same cost per square foot, they are ideal for use as second units on developed residential parcels.

Shared Housing Opportunities. Compatible, unrelated families and individuals living in one household help one another to cut housing costs and provide for companionship, dividing of chores, and assistance in child raising.

Catholic Social Services operates a Shared Housing Project for Santa Clara County using CDBG funds for the county and the cities of San Jose, Santa Clara, and Palo Alto, to match families and individuals. Approximately 300 families or individuals are served per year in this program, which costs \$90,000 to administer.

3.3.3 Governmental Constraints

(See the Plan Policies Report, Policy Area 18, and the Technical Supplement, Sections 2.1 and 3.5.4.)

Governmental actions can affect the development of housing in three principal ways:

Public service policies, such as plans for streets, water systems, and sewage treatment facilities, greatly influence the overall feasibility of developing housing in a particular jurisdiction.

Land use policies can affect the availability and price of residential land and the density of new residential development.

Processing time and fees influence the cost of housing, since the expense of holding land and the dollar value of required fees is passed to the housing consumer.

Public Services and Land Supply. The major constraint on housing development in Tracy at the present time is the capacity of the city's Wastewater Treatment Plant. Currently, the plant has no capacity available for new residential construction. However, improvements now underway should provide capacity for an additional 2,550 units by 1984. Table 3.8 illustrates Tracy's estimated needs for new residential construction over the next 20 years, and as the 1980-85 figures indicate, projected need is well under the 1984 capacity of the Wastewater Treatment Plant.

TABLE 3.8
INCREMENTAL NEED FOR NEW HOUSING UNITS
AND TOTAL HOUSING STOCK: 1980-2000

	<u>1980-85^a</u>	<u>1985-90</u>	<u>1990-95</u>	<u>1995-2000</u>
Incremental Needs				
Single Family ^b	1,603	1,585	1,770	1,955
Multiple Family	614	675	760	835
TOTAL	<u>2,217</u>	<u>2,260</u>	<u>2,530</u>	<u>2,790</u>
Total Housing Stock ^c	<u>1985</u>	<u>1990</u>	<u>1995</u>	<u>2000</u>
Single Family	7,320	11,630	14,160	16,950
Multiple Family	2,050	8,905	10,675	12,630
TOTAL	<u>9,370</u>	<u>2,725</u>	<u>3,485</u>	<u>4,320</u>

^aIncludes data on units actually constructed: 1980-81.

^bProjected at 70 percent of incremental unit gain per period.

^cRounded numbers.

A complicating factor is the growth management system established by Tracy to regulate development approvals until additional sewage treatment capacity is available. Section 2.1 of the Land Use Element indicates that 1,616 residential units are either under construction or have had final maps approved, while tentative or preliminary maps have been filed for an additional 2,663 units which are awaiting sewage treatment capacity allocations. The total of 4,279 prepared units must be regarded as committed development, i.e., it is unlikely that significant changes in unit types, costs, or tenures will occur. Over the long run, it has been estimated that the 1984 treatment plant (with improvements) could accommodate a maximum population of 35,000 (projected for 1994). After this point, further growth will require major expansion of the treatment plant, entailing substantial capital investment.²⁶

²⁶Source: CH²M Hill Engineering Corp.

All other city services are currently operating at or under capacity. However, there are two potential areas of concern over the next 20 years:

Water supply. The existing city system depends primarily on the Delta-Mendota Canal as a water source. At full entitlement, the city's share of these waters will support a population of 32,000²⁷ (projected for 1992).

Schools. While not a direct responsibility of the city, Tracy's existing school buildings are currently overcrowded. Subdivision fees are now being levied on new housing units (at \$275 per bedroom) to defray the cost of providing portable classrooms.

Tracy's land use policies cannot be described as overly restrictive. Table 3.9 shows minimum requirements for all residential zones. While the maximum theoretical dwelling unit density permitted is 31 units/gross acre (at 1,400 square feet per unit in the HDR zone), the maximum residential density permitted in the General Plan is 24 units per gross acre--a density consistent with the type of development currently provided by the local housing market. Although the minimum lot and floor area requirements of the RE zone might be regarded as restrictive, there are currently no vacant RE zoned parcels larger than 20,000 square feet. There is vacant available acreage in all other residential zones except Low Density Cluster, as shown in Table 2.1 of the Land Use Element.

Vacant incorporated land not already committed to development will accommodate an estimated 2,361 units.²⁸ This supply, when added to existing approved²⁹ and proposed³⁰ development, will satisfy projected need for residential land through mid-1993.³¹ Growth beyond this point will require annexation within Tracy's sphere of influence. The phasing of annexation will depend upon timely completion of sewage treatment plant improvements and the simultaneous expansion of other public services. However, the projected year 2000 population can be accommodated on the 1,068 remaining incorporated residential acres and on the 830 acres of unincorporated lands³² that have been designated for residential development on the General Plan map.

²⁷Blayney-Dyett estimate, based on average per capita consumption of 108,000 gallons per year (including residential, commercial, and industrial customers). This is slightly less than 300 gallons per capita per day, a figure that could be reduced substantially if the share used by "wet" industries declines.

²⁸See page 14, Land Use Element.

²⁹Final approval received; sewage capacity allocated.

³⁰Tentative or preliminary maps filed; sewage treatment capacity allocation pending.

³¹Assuming 75 percent of remaining uncommitted land is actually developed.

³²At 5.8 units per acre; 370 of these acres are currently under Williamson Act contracts, but this is not regarded as a development constraint over the long run.

TABLE 3.5
ILLUSTRATIVE DEVELOPMENT COSTS, CITY OF TRACY: 1981

	1,200 Sq. Ft. Single-Family, Conventional Construction, 5 Units/Gross Acre	1,200 Sq. Ft. Single-Family, Manufactured, 5 Units/Gross Acre	1,200 Sq. Ft. Single-Family, Manufactured, 6,000 Sq. Ft. Infill Lot	1,000 Sq. Ft. Condominium, Conventional Construction, 12 Units/Gross Acre	800 Sq. Ft. Apartment, Conventional Construction, 12 Units/Gross Acre
Land ^a	\$4,000 ^a	\$4,000 ^a	\$6,000 ^b	\$2,000 ^a	\$2,000 ^a
Development Costs					
Direct Costs					
Site Improvements	6,255 ^c	12,255 ^d	9,335 ^e	4,500 ^c	3,360 ^c
Construction Costs	41,700 ^f	38,340 ^g	38,340 ^g	30,000 ^f	22,400 ^f
Subtotal: Direct Costs	47,955	50,595	47,675	34,500	25,760
Indirect Costs					
Design Costs	4,795 ^h	2,530 ⁱ	2,385 ⁱ	3,450 ^h	2,575 ^h
Local Fees					
Water ^j	160	160	160	70	70
Sewer ^j	230	230	230	135	135
Storm Drainage ^j	240	240	240	100	100
Capital Improvements	75 ^k	75 ^k	75 ^k	75	75
Schools	825 ^k	825 ^k	825 ^k	550 ^l	550 ^l
Permits & Plan Check	572	385	385	330	260
Planning & Subdivision Fees ^m	30	30	—	15	15
Subtotal: Local Fees	2,130	1,945	1,915	1,275	1,205
Subtotal: Indirect Costs	6,925	4,475	4,300	4,725	3,780
Subtotal: Above Costs	58,880	59,070	57,975	41,225	31,540
Construction Financing ⁿ	5,338	— ^p	— ^p	3,760	\$2,895
Subtotal: Development Costs	64,220	59,070	57,975	44,985	34,435
Profit & Overhead ^o	12,040	— ^p	— ^p	8,434	—
Marketing at 5% of Sales Price	\$4,015	3,110	—	2,811	—
Sales Price	\$80,275	\$62,180	\$57,975	\$56,230	—

TABLE 3.9
RESIDENTIAL DEVELOPMENT STANDARDS

	<u>Minimum Building Site Area (square feet)</u>	<u>Minimum Floor Area Per Unit (square feet)</u>	<u>Front/Rear Setbacks (in feet)</u>	<u>Maximum Lot Coverage percent)</u>
RE Residential Estate	15,000 ^a	15,000	50/30	30
LDR Low Density Residential	5,600	None	15/10	45
LDC Low Density Cluster	4,000	650	15/10	50
MDR Medium Density Residential	6,000 ^b	650	15/10	45
HDR High Density Residential	6,000 ^c	300	15/0	30
PUD Planned Unit Development	0	0	0	0
RMH Residential Mobile Homes	3 acres ^d	0	Variable	10 units/acre

^aAverage for subdivision must be 20,000 sq. ft.

^b3,000 sq. ft. lot area per unit is required.

^c1,400 sq. ft. lot area per unit is required.

^dFor mobile home parks, 2,400 sq. ft. lot area per unit is required.

Processing Time and Fees. As shown in Table 3.5, local fees constitute a significant, but not substantial, share of housing costs. In addition to required fees, the time needed to process a development project can cause the cost of housing to increase. The longer a developer has to hold land during processing, the higher his unit costs--and these costs are typically passed along to the housing consumer.

However, Tracy's processing procedures--when compared to those of other cities--are not unduly wasteful of the applicant's time. The standard review period for tentative subdivision maps and site plans is 30 days, after which the time needed to revise maps and plans to meet city requirements is at the discretion of the applicant. Minimum total processing times³³ of three months for subdivision maps and two months for site plans have been reported by staff.

The total dollar amount of fees charged any single applicant can vary greatly with the characteristics of the site and the proposed development. The total fees shown in Table 3.5 are representative of total fees charged for different types of housing. A study conducted by the Association of Bay Area Governments in late 1981 estimated the average total value of local fees charged for residential development in the Bay Area was \$3,792 per unit. By comparison, Tracy's total of \$2,130 cannot be considered excessive.

This situation will change dramatically if additional fees are imposed to finance portable classrooms, expansion of wastewater treatment plant and water plant, or storm drain facilities. The city's current fee structure includes \$285 per bedroom for interim elementary school facilities, but funding is restricted to "interim" facilities (portable classrooms) (per Section 65974 of California Government Code). Tracy's existing elementary schools can accommodate 16 additional portable classrooms, for a total added student capacity of 464 students. This capacity level will probably be using scarce state school construction funds, if available, or other financing mechanisms. The high school will soon be reaching capacity and similar conditions and problems will also apply.

State and Federal Budget Constraints. While the cost of housing in Tracy is low in relation to the coastal metropolitan areas of California, there are a significant number of very low income households that cannot pay market rent. In the past, part of the need has been met by a variety of state and federal assistance programs, including rent subsidies (Section 8), mortgage insurance (FHA Sections 221(d)(4) and (236), and rehabilitation assistance (the Community Development Block Grant Program). (See "Existing Assisted Housing," Technical Supplement, Section 3.2.1.)

Data presented in the Housing Needs section indicate that lower income households will continue to be largely dependent on such housing assistance programs, particularly if affordability needs are to be addressed. Unfortunately, budgetary constraints at the state and federal levels may result in severe cutbacks and/or the elimination of many of these programs. The best available information indicates that the following cutbacks can be expected.

³³From date application is accepted as complete to date of final approval.

State Programs

Deferred Payment Rehabilitation Loans. Provided low interest loans for the rehabilitation of units occupied by low and moderate income households. The program is not accepting new applications, pending new appropriations.

Homeownership Assistance. Provided up to 49 percent of the purchase price of a unit and allowed reduction of required down payment to a minimum of 3 percent. Current appropriation has been exhausted and no new applications are being accepted.

Homeownership/Home Improvement Program (HOHI). Used funds from the sale of bonds to assist low and moderate income households in purchasing or rehabilitating homes by providing loans at below market interest rates. This program has been suspended pending resolution of problems involving the tax-exempt status of state bonds; however, the program is expected to continue.

Federal Programs

Community Development Block Grants. Provides funds to Tracy which are utilized for home rehabilitation and neighborhood improvement programs. The elimination of this program by fiscal year 1984 has been proposed.

Section 8. Provides rental housing subsidies to low income households. The program also provides incentives for construction of low income rental housing by guaranteeing potential developers that long-term assistance payments will be available to tenants. This "new construction" component of the program has been slated for elimination, and substantial cuts in assistance to occupants of existing rental housing are anticipated.

Section 236. Encouraged construction of low income rental housing by providing low interest loans to developers. This program has been suspended.

Section 265/235. Provided mortgage insurance to low and moderate income households and reduced mortgage interest rates to as low as 4 percent. This program is slated for elimination by March 1982; no new applications are being accepted.

3.3.4 Energy Opportunities

(See the Plan Policies Report, Policy Area 27; the Technical Supplement, Section 4.1.6; and the EIR, Section 2.3.)

The Energy Element contains detailed information on energy consumption and presents an integrated set of energy policies, however, energy-efficient housing is a principal means of achieving reduced consumption.

Energy-conserving measures can be divided into three major categories:

- incorporation of energy-conserving features in new residential construction;
- installation of energy-conserving features in existing residential units; and
- the practice of energy-conserving measures by residents.

Most energy-conserving features which can be incorporated into new construction can also be installed in existing units. A discussion of such features is provided in Section 4.1.6 of the Technical Supplement. Energy-conserving measures which should be considered in staff review of prepared residential developments are also discussed in Section 4.1.6 of the Technical Supplement.

3.4 HOUSING POLICIES, IMPLEMENTATION ACTIONS, AND OBJECTIVES

The City of Tracy has developed housing policy statements, implementation actions, and quantified objectives that address identified needs while taking into account potential constraints. Policies, actions, and objectives are grouped into six policy areas:

- (1) Housing Preservation and Neighborhood Improvement
- (2) Provision of Housing Sites
- (3) Provision of Housing Choice
- (4) Affordable Housing
- (5) Special Housing Needs
- (6) Energy Conservation

Policy statements are designed to provide well-defined guidelines for decision-making. Implementation actions consist of specific program commitments designed to carry out the city's housing policies. Objectives provide specific numerical targets in policy areas where such specificity is appropriate.

Housing policy statements, implementation actions, and objectives are listed in Section 3.0 of the Plan Policies Report. The Housing Program section of this Technical Supplement, Section 3.5, provides additional detail on the relationship between policies, actions, and objectives.

3.5 THE HOUSING PROGRAM: 1982-1986

3.5.1 Introduction

Sections 3.2 and 3.3 of the Technical Supplement provide an assessment of Tracy's existing and projected housing needs, and of the constraints that may interfere with the city's ability to address those needs. The policies and implementation actions presented in the Plan Policies Report outline the city's overall housing strategy. The Plan Policies Report also includes specific objectives for the 1982-1986 program period, in compliance with state law (Government Code, Section 65583(b)).

The purpose of this section is to outline the relationship between Tracy's housing needs and the policies, implementation actions, and objectives set forth in the Plan Policies Report.

3.5.2 Guiding Principles

The California laws governing Housing Element content state in part:

"It is recognized that the total housing needs identified pursuant to subdivision (a) may exceed available resources and the community's ability to satisfy this need within the context of the General Plan requirements outlined in Article 5 (commencing with Section 65300). Under these circumstances, the quantified objectives need not be identical to the identified existing housing needs, but should establish the maximum number of housing units that can be constructed, rehabilitated, and conserved over a five-year time frame."

This provision of state law underscores the fact that few, if any, California communities are capable of meeting all of their identified housing needs. In Tracy's case, for example, it is highly unlikely that any form of city action could ensure the construction of 1,042 housing units affordable to very low income households (maximum 1981 monthly rent/payment of \$252) over the next five years. In addition, the long-range impacts of Propositions 13 and 4, potential loss of Community Development Block Grant funds, threatened cutbacks in other state and federal assistance programs, and prevailing high interest rates will limit the ability of the city to take direct action.

For these reasons, the city's 1982-86 Housing Program emphasizes three types of actions:

1. Private Sector Incentives:

Policy/Action References: 17-1b, 18-1b, 20-1e, 20-1f, 20-2, 20-3, 20-4, 21-2, and 21-3.

2. Development Monitoring System: collection and analysis of housing data over the five-year program period as a means of assessing progress in meeting housing needs.

Policy/Action References: 18-1a, 19-2, and 20-3.

3. Housing Information and Referral Service: supplying housing data and program information to residents and potential developers.

Policy/Action References: 20-a, 20-2, 20-3, 20-5, 20-6, 20-7, 20-8, and 21.2.

3.5.3 Affordable Housing: A Working Definition

(See the Plan Policies Report, Policy Area 20, and the Technical Supplement, Section 3.2.1.)

The general definition of affordable housing provided in Section 3.2.1 of the Technical Supplement may prove difficult to apply to specific development proposals which employ the density bonus permitted in Implementation Policy 20-3a. To complicate matters, the state law (Government Code Section 65915), which is the basis for the density bonus, defines "low and moderate income households" on the basis of income and family size only, without taking account of the percentage of income required for mortgage payments or rents.

For these reasons, a working definition of "low and moderate income households" is required to implement the density bonus called for in Implementation Policy 20-3a.

Definition: For purposes of Implementation Policy 20-9 and California Government Code Section 65915, "housing for persons or families of low or moderate income" shall mean housing actually sold or rented to persons or families with the following maximum annual incomes:

<u>Family Size</u>	<u>Annual Income*</u>
1	\$20,350
2	23,250
3	26,150
4	29,050
5	30,850
6	32,650
7	34,500
8+	36,300

*California Department of Housing and Community Development, 1981 income limits for moderate income households.

In the case of for-sale housing, the definition requires developers to guarantee and verify that housing units built to satisfy the percentage requirements of Implementation Policy 20-9 will actually be sold to families with incomes equal to or less than the maximum levels shown above. At the time such units are sold, the purchaser should be required to guarantee owner-occupancy of the unit for at least one year in order to discourage speculative purchases.

For rental housing, the definition requires developers to guarantee and verify units built to satisfy Implementation Policy 20-9 will actually be rented to families with incomes equal to or less than the maximum levels shown above. To ensure continued availability of these units to low and moderate income families, an annual verification of tenant income will be required.

3.5.4 Summary of Needs, Implementation Policies, and Objectives by Policy Area

(See the Plan Policies Report, Policy Areas 4, 17, 18, 19, 20, and 21.)

Policy Area 17: Preservation of Housing and Neighborhoods

Identified Needs	613 substandard dwelling units and four incorporated neighborhood revitalization areas.
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Quantified Objectives:

- A. Rehabilitate 75 housing units at an average annual rate of 25 units.

Responsible Agency: Community Development Department.

Funding Source: Community Development Block Grant.

Funding: \$251,000 through 1983.

- B. Provide infrastructure improvements in the downtown Tracy neighborhood revitalization area.

Responsible Agency: Community Development Department.

Funding Source: Community Development Block Grant.

Funding: \$880,000 through 1983.

- C. Conduct 150 Courtesy Housing Inspections at an average annual rate of 30 inspections.

Responsible Agency: Community Development Department.

Funding Source: Community Development Block Grant (proposed).

Funding: Ongoing Program.

Policy Area 18: Provision of Housing Sites

Identified Needs 2,310 new sites

Quantified Objective: Provide 2,310 new housing sites at an average annual rate of 437 sites.

Encourage more efficient use of single-family homes and lots through sharing of existing units or construction of second units on large lots.

Responsible Agency: Community Development Department.

Funding Source: General Fund for administration; developer processing fees.

Funding: No special funding required for administration; \$205,000 currently budgeted for sewage treatment plant improvements.

Policy Area 19: Provision of Housing Choice

Identified Needs: Rental housing needs to be determined after publication of detailed 1980 census data.

Quantified Objective: Encourage construction of sufficient rental housing to maintain 1980 rental share of total housing stock.

Responsible Agency: Community Development Department.

Funding Source: General Fund.

Funding: No special funding required.

Policy Area 20: Affordable Housing

Identified Needs: 1,821 housing units affordable for very low, other lower, and moderate income households at an average annual rate of 364 units.

Quantified Objectives:

- A. Encourage developers to construct the maximum feasible number of rental units affordable to "very low" and "other lower" income households over the five-year program period.

Responsible Agency: Community Development Department for administration.

Funding Source: Federal Section 8 (new construction) program, subject to availability of fund.

Funding: No special funding required.

- B. Encourage developers to construct the maximum feasible number of rental units affordable to "other lower" or "moderate" income households.

Responsible Agency: Community Development Department

Funding Source: General Fund.

Funding: No special funding required.

- C. Assist in the development and sale of moderate income owner-occupied housing by participating in programs to provide residential mortgages at below market rates financed through the sale of tax exempt revenue bonds.

Policy Area 21: Special Housing Needs

Identified Needs:

	<u>Affordable Housing</u>	<u>Other</u>
Elderly and handicapped households	513	NA
Female-headed households*	507	NA
Minority households	633	2,694
Farmworker households	NA	164
Large Families	333	NA
Handicapped	NA	2,805

*Tracy City only.

Quantified Objectives:

- A. Provide for an appropriate proportion of all new ground-floor, multi-family housing units to be usable by elderly or handicapped persons.

Responsible Agency: Community Development Department.

Funding Source: General Fund.

Funding: No special funding required.

- B. Construction by private sponsors of the maximum feasible number of housing units affordable to "low," "other lower," and "moderate" income elderly households over the five-year planning period.

Responsible Agency: Community Development Department for coordination.

Funding Source: Private sponsor, utilizing FHA Section 202 funding or equivalent.

Funding: No special funding required.

Energy Conservation Policy Area

(See Policy Area 27.)

4.0 ENVIRONMENTAL FACTORS SECTION

The Environmental Factors Section includes the City of Tracy's Conservation Element, Noise Element, and Safety and Seismic Safety Element. Because the Tracy General Plan area includes a large area under the jurisdiction of San Joaquin County and because many of the environmental issues are regional concerns (wildlife, agriculture, water quality, emergency preparedness, seismic geology, and energy conservation), most of the environmental factors program has been derived from the county's General Plan elements. Portions of the county's elements that are directly applicable to the Tracy General Plan area form the basis of the Environmental Factors Section, and are supplemented with information and concerns that are more local in nature (flood, fire and crime hazards, noise, historic resources, and archaeological resources).

4.1 CONSERVATION ELEMENT

4.1.1 Water Resources

(See the Plan Policies Report, Policy Area 22.)

Water resources in the Tracy Planning Area are primarily groundwater resources, although the water resources of the Sacramento-San Joaquin Delta to the north, Corral Hollow Creek just south of the planning area, and imported water from the Delta Mendota Canal are important to Tracy.

Groundwater

The geology of the Tracy area includes surface alluvial deposits underlain by the Tulare formation, which has moderate permeability and consists of water-bearing sand and gravel. An extensive layer of Corcoran clay at the base of the Tulare formation confines another layer of water that is trapped in a Tehama formation below the clay. Water above the Corcoran clay is called the upper zone and water below the clay is called the lower zone. The upper zone has lower yields and poorer quality than the lower zone and is subject to contamination from Delta water.³³ Water quality in the Delta is degraded by agricultural, municipal, and industrial wastewaters; salinity incursion; and poor quality inflows from the San Joaquin River. Low flows in dry years compound the problem.³⁴ The lower aquifer contains freshwater and is sealed off from the Delta by clay.

In order to replenish supplies of groundwater that are pumped out, water must infiltrate the soil and penetrate to the basin. Substantial replenishment, or recharge, occurs along rivers, and slight to moderate recharge occurs in the alluvial fans of

³³Creegan & D'Angelo-McCandless, 1970 (March). Master Plan: City of Tracy Water Supply Development, Transmission, Treatment, and Storage.

³⁴San Joaquin County, 1973 (June). Open Space/Conservation Element: Stockton.

rivers. When, over a period of time, the amount of groundwater withdrawn is greater than the amount of recharge, an overdraft occurs. With the City of Tracy no longer relying exclusively on groundwater for its water supply, there is danger of a groundwater overdraft.

Prior to Tracy's construction of a potable Water Treatment Plant in 1979, the city relied on groundwater wells for all of its water needs. Water processed at the treatment plant is obtained from the Delta-Mendota Canal under contract with the Bureau of Reclamation. During peak demand periods, groundwater continues to supplement canal water. Groundwater will also be heavily relied on for three to four months every three years while the canal is drained and cleaned. Two major industries, Holly Sugar and Laura Scudders, and a number of agricultural uses in the planning area also obtain their water supply from wells.

The range and depth of the lower aquifer is from -800 to -1,600 feet; however, at depths greater than -900 feet, the water can become brackish because of mixing with recharge from the San Joaquin River system.³⁵ The San Joaquin River contains poor quality water, which is mainly due to agricultural wastewaters and low flow drains resulting from upstream diversions.³⁶

Quality of the groundwater is poor on two counts. Total dissolved solids (tds), which should not exceed the desired maximum of 500 parts per million (ppm), range from 458 to over 1100 ppm and appear to be increasing. Hardness, calcium carbonate (CaCO_3) averages about 330 ppm, when 100 ppm is desirable.³⁷ Dissolved solids interfere with the water absorption capabilities of plant root systems, and hardness interferes with the washing properties of soaps and causes scale to be deposited in boiling and heat exchange equipment, along with pipeline and equipment corrosion. The pipelines :

groundwater quality can become degraded by cross connections between strata of poor quality and good quality groundwaters, often the result of cross connections between sewage wastewater and groundwater, or poor well construction, which allows low quality water from the upper aquifer to move down and contaminate the lower aquifer, or when wells have penetrated the base of the freshwater and entered the brackish water zone. Figure 4.1.1 shows the lines of elevation of water in wells in 1980. Groundwater quality can also be degraded by saline intrusion from saline bodies of water and by recharge from agricultural wastewater with high saline content.³⁸

³⁵ Creegan & D'Angelo-McCandless, op. cit.

³⁶ San Joaquin County, Open Space/Conservation Element, op. cit.

³⁷ Creegan & D'Angelo McCandless, op. cit.

³⁸ San Joaquin Council of Governments, 1973. Conservation Element.

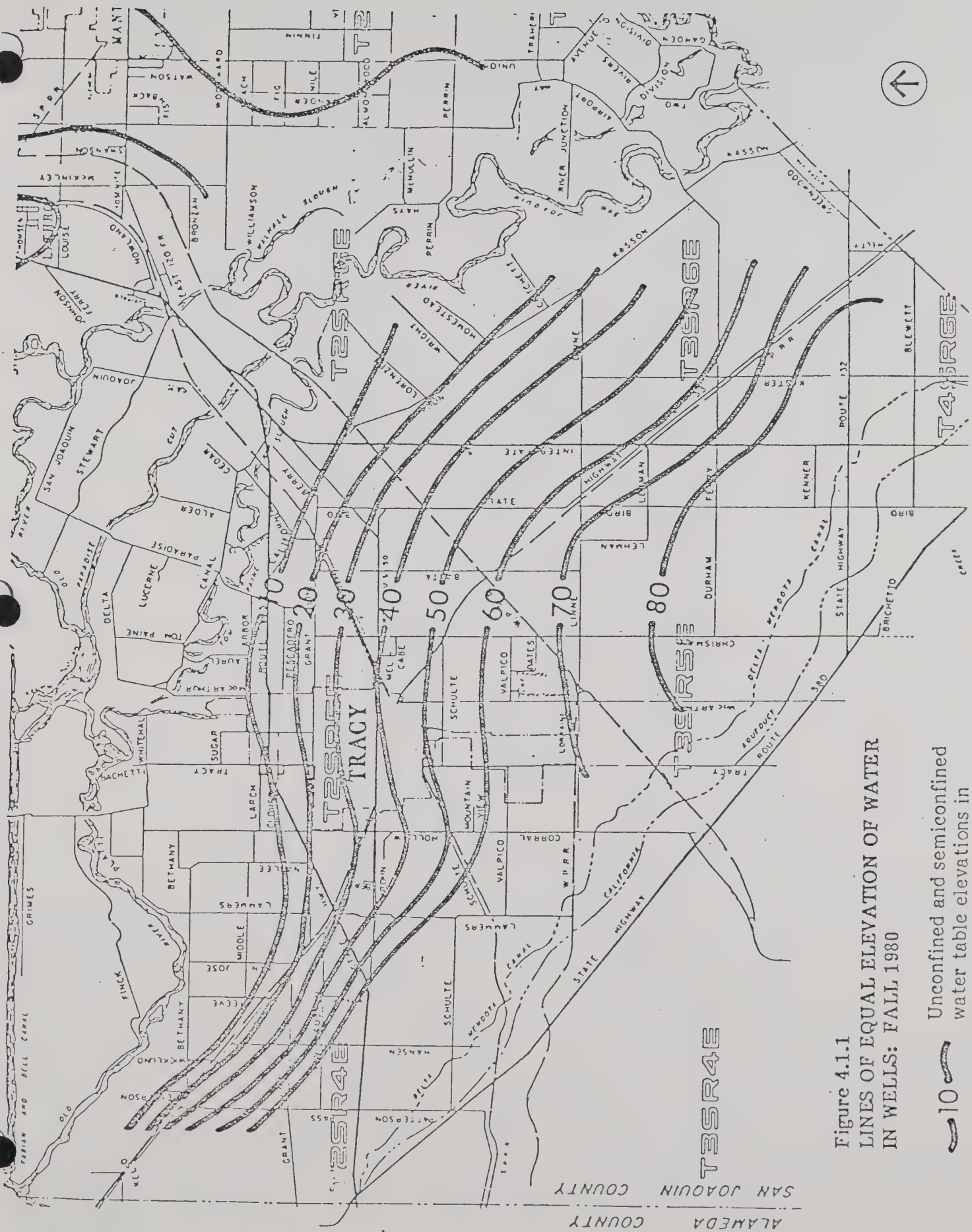


Figure 4.1.1
 LINES OF EQUAL ELEVATION OF WATER
 IN WELLS: FALL 1980

Unconfined and semiconfined
 water table elevations in
 10-foot contour intervals

Waste disposal to land by means of leach lines from septic tanks introduces water of poor quality into the soil pore spaces immediately surrounding the point of waste application. This point is generally above the water table. Under the action of gravity, the wastes percolate vertically downward until they join the main groundwater body, or are intercepted by an impermeable soil layer. Since horizontal diffusion is more rapid than vertical diffusion, wastes percolating from the ground surface tend to remain concentrated in the surface zone of a free groundwater body.

San Joaquin County has an ordinance based on the California Regional Water Quality Control Board's (Central Valley Region) guidelines for waste disposal from land developments. These guidelines deal with individual disposal systems, specifically septic tank leaching systems. Recognizing that many areas within the Central Valley are not conducive to individual waste treatment and disposal systems, the guidelines are designed to discourage such systems and encourage connections to public sewers or, where this is not feasible, creation of a community sewage treatment and disposal system. In the criteria for septic tank leaching systems, the State Board has specified minimum distances to water wells, streams, and property lines. Minimum criteria for percolation rates, soil depths, depths to groundwater, and ground slopes are considered and minimum disposal areas have been determined.

Although the most serious type of groundwater contamination is from pathogenic micro-organisms from human wastes, these tend to disappear from groundwater flow in a matter of from 2 to 20 feet from the point of injection. Bacterial survival times vary, and the extent of groundwater pollution depends on survival time and speed of transport, which varies with the soil. In tight soils, which support a high water table, intense pollution can result in localized areas. The Larch-Clover area, north of I-205 in the planning area, has a very high water table and poor drainage. The area has had septic tank failures, and tanks in this area require frequent repairs and must be pumped out more often than tanks in other areas. San Joaquin County instituted Stage I of a Clean Water Grant for the Larch-Clover area in late 1981, to try to find the most economical way of providing sewers for this area.

High concentrations of chemical contaminants are capable of impairing the quality of groundwaters. Dissolved solids interfere with water absorption capabilities of plant root systems. Chlorides and boron cause leaf burning of sensitive crops. Sodium causes certain soils to clog and become impervious to water infiltration. Animal life is harmed by heavy metals and certain organic compounds. Sulfates in drinking water cause digestive upsets. Iron and manganese cause staining and clogging of water transport systems and fixtures. Once these concentrations are introduced into groundwaters, the only abatement mechanism available is dilution by sufficient travel in the groundwater flow.

Irrigation water often provides recharge to the waters of the groundwater basin. Water not consumed by the plants may be evaporated or transpired. As this occurs, the salt concentration increases in the remaining water in the soil. The net effect is a progressive mineralization of the groundwater table by applications of irrigation water. Mineralization may be restricted to tolerable limits by exporting more salts than are imported. This requires that groundwaters be leached to surface drainage courses by heavy applications of irrigation waters.

Imported Water

The source of the water supply of the Delta-Mendota Canal is a body of water just south of the Clifton Court Forebay at the junction of the Old River and the Grant Line and Fabian-Bell canals. Water is pumped into the canal at all tidal cycles. The U.S. Bureau of Reclamation is not responsible for and will not guarantee a potable water supply in the Delta-Mendota Canal.³⁹ Water from the canal is used by the City of Tracy and by the Westside Irrigation District. The city's water treatment plant chemically treats and filters canal water so that it meets or exceeds the established criteria of the California Department of Public Health and the Public Health Service. Table 4.1.1 summarizes water quality in the Delta-Mendota Canal.

Delta Water

The waterways of the Sacramento-San Joaquin Delta are of economic and recreational importance to Tracy, although they are mainly outside the General Plan area.

The channels of the Delta are used for navigation by smallcraft, and the Deepwater Channel is a commercial shipping lane, terminating at the Port of Stockton. Marinas and smallcraft harbors throughout the Delta serve recreational boaters. The waterways are used extensively for boating, waterskiing, swimming, hunting, and fishing. Picknicking, photography, birding, nature study, and aesthetic enjoyment of the environment are also popular Delta activities.

Most of the land along the waterways in the Delta is privately owned. Lack of public access to the waterways causes many problems including littering, trespassing, and property destruction.

Some areas of the Delta become congested and dangerous with incompatible uses such as navigation, water skiing, pleasure boating, and extended periods of fishing and anchorage. Extensive resort development in the Delta disturbs fish, wildlife, and vegetation and takes away from the Delta character by destroying some of the feeling created by this unique open space.

The levees, which keep the water channelized and are private property, are being damaged by boat wakes and people trespassing on them, forcing costly repairs by landowners or maintenance agencies.

Many boats do not have holding tanks and raw sewage is often discharged directly into the waterway, and pumpout facilities for boats with tanks are not available at many marinas. Waste is also discharged from commercial ships and trash and garbage are dumped in or along the waterways by recreationists, travelers, or people disposing of household refuse. Fueling of boats and ships and transfer of cargo at the port are also potential pollution hazards.

³⁹Environmental Impact Planning Corporation, 1976 (November). Final Environmental Impact Report, Potable Water Treatment Facilities: Tracy, California.

TABLE 4.1.1
WATER QUALITY AT HEAD OF DELTA-MENDOTA CANAL^a

Parameter	Date and Time of Day			
	02-11-75 8:30 a.m.	05-13-75 2:30 p.m.	08-11-75 2:45 p.m.	11-11-75 2:15 p.m.
Water temperature, °C	12.0	20.0	26.0	14.0
Conductivity at 25°C, microm	320.0	255.0	193.0	323.0
pH	—	7.5	7.3	6.9
Residue dissolved at 180°C, mg/l	206.0	165.0	130.0	200.0
Calcium, mg/l	—	17.0	11.0	19.0
Magnesium, mg/l	—	8.0	7.0	8.0
Potassium, mg/l	—	2.0	2.0	3.0
Sodium, mg/l	—	26.0	18.0	37.0
Sodium, percent	—	42.0	40.0	49.0
Chloride, mg/l	36.0	33.0	15.0	40.0
Total sulfate, mg/l	—	24.0	18.0	28.0
Carbonate ion, mg/l	—	—	—	—
Bicarbonate ion, mg/l	—	67.0	78.0	79.0
Boron, g/l	—	100.0	110.0	130.0
	02-05-74 3:30 p.m.	05-16-74 1:15 p.m.	08-06-74 3:30 p.m.	11-05-74 3:00 p.m.
Water temperature, °C	—	20.0	2.0	15.0
Conductivity at 25°C, microm	393.0	409.0	307.0	358.0
pH	7.5	7.0	7.2	—
Residue dissolved at 180°C, mg/l	220.0	—	218.0	231.0
Residue dissolved at 105°C, mg/l	—	261.0	—	—
Calcium, mg/l	—	22.0	14.0	—
Magnesium, mg/l	—	10.0	9.3	—
Potassium, mg/l	—	2.2	2.2	—
Sodium, mg/l	—	42.0	37.0	—
Sodium, percent	—	48.0	47.0	—
Chloride, mg/l	46.0	56.0	55.0	48.0
Total sulfate, mg/l	—	49.0	36.0	—
Carbonate ion, mg/l	—	—	—	—
Total alkalinity as CaCO ₃ , mg/l	—	—	59.0	—
Bicarbonate ion, mg/l	—	85.0	72.0	—
Boron, g/l	—	220.0	140.0	—

^aSource: U.S. Department of the Interior, 1974 and 1975.

The State Resources Agency has published a revised Delta Master Recreation Plan, which includes recommendations for waterway use, access locations, and acquisition proposals. The five Delta counties have formed the Delta Advisory Planning Council to work on a coordinated approach to the problems of the Delta.

Sugar Cut, the only arm of the Delta within the General Plan area, formerly was used for barge shipments to the Holly Sugar Plant. Currently it is used occasionally for fishing access.

4.1.2 Wildlife, Habitat, and Vegetation

(See the Plan Policies Report, Policy Areas 8, 9, and 23.)

Wildlife

Wildlife has commercial, recreational, and other value to the citizens of Tracy.

San Joaquin County ranks high among California counties in commercial fur trading, particularly mink, muskrat, and beaver. Many local businesses are supported by sportsmen and by people who come to the county because of wildlife. Because of the presence of game birds, hunting is a major fall and winter recreational activity in the Tracy area.

A variety of animals, now and in the future, is important for maintenance of a balance of nature. Some animals may also be of medical/scientific or other value to man, which is not known or completely understood at this time. Knowledge or benefits that might be gained from these animals will be lost if the animals no longer exist.

The foothills, agricultural land, and the Delta support a variety of wildlife including some rare and endangered species.

Much of the aesthetic attraction of the Delta can be attributed to the bank and levee vegetation, which also provides habitat for a large segment of the county's wildlife.

The animals found in the foothills in the southwestern and eastern portions of the county include deer—the county's only large mammal—a variety of birds, small mammals, reptiles, and a few species of amphibians. The endangered short-nosed leopard lizard, rare kit-fox, and rare giant garter snake are also found in the southwestern foothills. The bald and golden eagles are occasional visitors to the county. Cultivated land supports many types of wildlife, particularly game birds, such as quail, pheasant, and dove. The Delta is also a major wintering area along the Pacific Flyway for migratory waterfowl. Sometimes well over 500,000 birds winter there. Shorebirds from Bethany Forebay and Victoria Island feed on grain fields in the Tracy area.

Habitat

Wildlife can survive only if water, food, and habitat are available.

In the Tracy area, water and food are abundant but there has been extensive removal of wildlife habitat, not as much by urban development as by the clearing of land for agricultural production and the draining and leveeing of the Delta. Much of the game that is indigenous to this area has been either forced out or rendered close to extinction because of these factors.

Survival of the wildlife that is now present is difficult because of habitat removal, a problem that is more severe during times when the fields are left fallow. Vegetation along fence lines, irrigation ditches, or on unused portions of land provide appropriate habitat for many varieties of wildlife, especially game fowl, but weed abatement programs often remove this type of habitat.

Riparian habitat is the most extensive habitat in the county because of the number of waterways. Most of the riparian habitat is in the Delta, although good riparian habitat is also found along the Delta-Mendota Canal and the California Aqueduct. Table 4.1.2 summarizes the riparian wildlife species.

Vegetation

There is little native vegetation remaining in the Tracy General Plan area.

There are six endangered native plant species in the county as identified by the California Native Plant Society. The endangered plants are: Amsinckia grandiflora, Cirsium carassicaule (thistle), Eryngium racenosum (button snakeroot), Juglans hindsii (California black walnut), Orcuttia greenel (a grass), and Tropidocarpum capparideum (member of the mustard family). Exact locations of these plants have not been determined.⁴⁰

4.1.3 Extractive Resources

(See the Plan Policies Report, Policy Area 24.)

Sand and gravel are the primary extractive resources in the Tracy planning area. Four gravel removal operations are located in the Tracy General Plan area, all of them south of Linne Road. Two are on sites near MacArthur Drive, one is west of Tracy Boulevard, and one between Tracy Blvd. and MacArthur Drive. These operations produce sand and gravel from alluvial fan deposits. Alluvial fans are deposits of streamborne material found at the mouths of mature streams and at points where mountain streams emerge onto valley floors or plains. Because fan deposits of sand and gravel occur with varying proportions of silt and clay, they require extensive processing, including crushing, screening, and washing.

⁴⁰San Joaquin County, Open Space/Conservation Element, op. cit.

TABLE 4.1.2
WILDLIFE SPECIES OF THE RIPARIAN COMMUNITY

<u>Mammals</u>	<u>Migratory Birds</u>	<u>Other Bird Species</u>	<u>Amphibians & Reptiles</u>
Opposum	Mallard	California Gulls	Salamander
Raccoon	Pintail	Ring-billed Gulls	California Red Legged Frog
Mink	American Pigeon	Redwinged Black Bird	California Yellow Legged Frog
River Otter	Coot	Yellowheaded Black Bird	Southern Pacific Terrapin
Skunk	Canadian Goose	Great Blue Heron	Giant Garter Snake
Gray Fox	White-Fronted Goose	Common Snipe	
Beaver	Snow Goose	Marsh Hawk	
Muskrat	Whistling Swan	Yellow Warbler	
Deer Mouse	Shoveler	Long Billed Marsh Wren	
Black Rat	Cinnamon Teal	Red-Bellied Red-Shouldered Hawk	
Black-tailed Deer	Green-winged Teal		

Source: Lloyd Ingles, Mammals of California; Audobon Society, Amphibians and Reptiles of Pacific States; California Department of Fish and Game, At the Crossroads, 1972, as cited by City of Tracy, Open Space, Conservation, and Recreation Elements, 1973, p. 11.

Declining availability of sand and gravel resources contributes to increased building costs. Market demand, competition, excavation expenses, material quality, and availability are important economic factors that affect sand and gravel prices, but transportation costs are a major factor that usually prohibit long distance hauling of the resource.

Essential as the industry is to the economic well being and growth of an area, the industry is regarded or viewed by the general public as a nuisance. The following are the most objectionable characteristics of the industry and produce the greatest conflict between the industry and the community: noise generated by the extraction, processing, and transporting equipment; dust from dry screen separation processes; vehicles moving on unpaved roads; and spilled material on paved roads. Plants manufacturing asphalt paving emit noxious odors and release minute asphaltic particles into the atmosphere. Streamwaters may become muddy and polluted or the water course altered, and operational wastewater requires disposal. Storage areas, structures, machinery, stripped and pitted stream courses, and countryside can be unsightly, while heavy equipment, settling ponds, and excavations both during operations and after abandonment can be health and safety hazards. Water quality and supplies can be endangered; streambank erosion can become a hazard; and the land can be left in an unusable state.

Scarred landscapes and disturbances or removal of migratory fish-spawning gravels have been common results of past excavations. Greater controls are placed on present operations, and excavators feel a stronger responsibility to control operations and rehabilitate sites.

Because of limited supplies and prohibitive transportation costs, deposits close to expanding areas must be utilized to the fullest extent possible, and non-compatible uses prohibited near these areas or possible future excavation sites.

All of the gravel pits in the Tracy area are located outside the city limits and are subject to regulation by a San Joaquin County excavation ordinance. After specific requirements are met by an excavator, a permit is issued. However, site rehabilitation bonds are not mandatory, and there is no time schedule required for site rehabilitation. Excavating in a stream channel is also permissible if all regulating agencies are contacted and approve.

4.1.4 Soils and Agricultural Resources

(See the Plan Policies Report, Policy Areas 2 and 25, and the Technical Supplement, Sections 2.1 and 2.4.)

The prime agricultural soils underlying and surrounding Tracy have always been the leading contributor to its economy. Today, a majority of the non-governmental jobs in the planning area are in growing, processing, and packaging food products. Nearly all of the underdeveloped portion of the valley floor in the planning area is devoted to irrigated crops or orchards. The Westside Irrigation District, the Banta Carbona Irrigation District, and the Naglee-Burke Irrigation District operate systems of canals for delivering water. Figure 2.1 of the Technical Supplement depicts extent, type, and quality of agricultural land around the city. The agricultural preserve boundary noted in the figure indicates areas within and adjacent to the City of Tracy not presently eligible for Williamson Act contracts.

Climate and Soils

The Tracy planning area shares the Mediterranean-type climate of the Great Central Valley, with its hot, rainless summers and cool, moist winters.

The mean temperature at Tracy is 94.7°F for July and 43.5°F for January. Summer nighttime temperatures usually drop to the low sixties Fahrenheit, resulting in summer daily temperature ranges of as much as 35°F. Temperatures often drop to or slightly below freezing on winter nights, rising to the low fifties Fahrenheit during the days.

Mean annual precipitation at Tracy is approximately 10 inches. Over 90 percent of the precipitation is brought by northwesterly Pacific storms between November and April. Infrequent spring and summer thunderstorms, usually from the south, bring most of the remainder.

Dense radiation fogs ("tule fogs") are a prominent characteristic in fall and winter. They normally form at night and dissipate during the day, but under stagnant atmospheric conditions in January and February, fogs may persist for four to five weeks with only brief clearings.

San Joaquin County has the longest average growing season in the Central Valley, with an average period of approximately 280 days between killing frosts in the vicinity of Tracy.

The Tracy planning area lies in the upland valley portion of the Central Valley geomorphic province. From the edges of the Delta, the upland valley rises gradually in elevation toward the west and the southwest. Most of the area lies at elevations between sea level and 100 feet (30 meters) above sea level.

The upland valley, flat and featureless in most places, is broken by the bottomlands of the major rivers and the smaller streams. It has been extensively leveled and graded in the course of cultivation and urban development.

The soils of the upland valley consist of mineral alluvium, produced through the erosion of rocks in the surrounding mountains and foothills and transported to the valley floor by rivers and streams.

A number of systems are presently in use for classifying soils on the basis of their usefulness for agriculture. The two most widely used in California are the Storie Index, developed by the University of California, and the Land Use Capability System, developed by the Soil Conservation Service of the United States Department of Agriculture.

The Storie Index classifies soils on a 0-100 numerical scale on the basis of the number of types of crops that they can support. The Land Use Capability System assigns soils to Classes I through VIII on the basis of the number of problems they present for plant growth, with Class I soils presenting the fewest problems.

What are "prime agricultural soils"? Class I and II soils under the Land Use Capability System and soils rated 80-100 under the Storie Index are usually considered prime. Sometimes Class III soils and those rated 60-79 on the Storie Index are also

categorized as prime soils, but two subclasses of Class II soils are frequently omitted in this case.

Both the Storie Index and the Land Use Capability System rate soils strictly on the basis of their properties. No effort is made to take into account such factors as climate and water availability, which influence plant growth.

It should be emphasized that some soils that are not highly rated under the Storie and Land Use Capability Systems are nevertheless profitably used for agriculture, while some "prime" soils may be unusable because of lack of water.

Table 4.1.3 summarizes the physical and chemical properties of the soils in the Tracy area.

Conversion of Agricultural Lands

Since most of Tracy's urbanized areas are surrounded by producing farmlands, the loss of some agricultural land to urban development has been inevitable. However, relatively little effort has been made to direct development to less valuable agricultural lands in order to keep more valuable lands in production.

In recent years, scattered non-farm residences have been built in agricultural areas, taking farmland out of production and causing problems such as restrictions on spraying in close proximity to dwellings. Sand and gravel quarrying has taken significant acreages out of agricultural production. (About 200 acres in the southwestern part of the county were taken out of production by quarrying between 1976 and 1979.) Present county ordinances require topsoil stockpiling and other provisions for rehabilitating quarries after operations have been completed. Roadways and highways, Tracy Airport, canals, and federal, state, and local government facilities have also taken farmland out of production.

Interference with Agriculture by Other Land Uses

Incidents of trespassing, vandalism, and theft tend to increase in frequency when residential development is in close proximity to farmlands.

Orchards and vineyards that are no longer being maintained can harbor pests and crop diseases. State laws requiring their removal are difficult to enforce.

Yard and backyard plantings in residential developments can also harbor pests and diseases that may damage crops.

Urban development in agricultural areas may cause businesses that provide crop processing and marketing services or that sell agricultural supplies and equipment to close or relocate, causing problems for farmers remaining in the area.

TABLE 4.1.3
PHYSICAL AND CHEMICAL PROPERTIES OF SOILS

Soil Name & Map Symbol	Depth	Permea- bility	Available Water Capacity	Soil Reaction	Shrink- Swell Potential
	<u>In</u>	<u>In/Hr</u>	<u>In/In</u>		
Br	0-21	0.2-0.6	0.17-0.18	6.1-8.4	Moderate
Brentwood	21-48	0.2-0.6	0.14-0.19	6.1-8.4	Moderate
Clay loam	48-60	0.2-0.6	0.17-0.19	7.9-8.4	Moderate
Cp, Cp5	0-22	0.06-0.2	0.12-0.16	5.6-8.4	High
Capay clay	22-60	0.06-0.2	0.12-0.16	6.6-8.4	High
Cw	0-20	0.06-0.2	0.11-0.16	5.6-8.4	High
Capay clay, wet	20-60	0.06-0.2	0.11-0.16	6.6-8.4	High
Lr	0-7	0.2-0.6	0.10-0.15	6.1-7.3	Moderate
Los Robles	7-39	0.2-0.6	0.09-0.15	6.1-7.8	Moderate
Clay loam	39-60	0.2-0.6	0.06-0.09	6.1-7.8	Low
Ls	0-15	0.2-0.6	0.15-0.18	6.1-7.3	Moderate
Los Robles	15-40	0.2-0.6	0.13-0.18	6.1-7.8	Moderate
Clay loam	40-60	0.2-0.6	0.16-0.18	6.1-7.8	Moderate
Rk	0-7	2.0-6.0	0.13-0.16	6.1-7.8	Low
Reiff loam	7-26	2.0-6.0	0.09-0.12	6.6-8.4	
	26-49	2.0-6.0	0.08-0.14	6.6-0.14	Low
	49-60	2.0-6.0	0.10-0.12	6.6-8.4	Low
Rn	0-9	0.2-0.6	0.17-0.19	6.1-7.3	Moderate
Rincon silty	8-31	0.06-0.2	0.12-0.15	6.6-8.4	High
clay loam	31-60	0.2-0.6	0.13-0.17	7.4-8.4	Moderate
Rw	0-8	0.2-0.6	0.17-0.19	6.1-7.3	Moderate
Rincon silty					
clay loam, wet	8-60	0.06-0.2	0.12-0.15	6.6-8.4	High
Vr	0-27	0.2-0.6	0.17-0.18	6.6-8.4	Moderate
Vernalis	27-47	0.2-0.6	0.14-0.18	6.6-8.4	Moderate
clay loam	47-61	0.2-0.6	0.11-0.18	7.9-8.4	Low
Vw	0-27	0.2-0.6	0.17-0.18	6.6-8.4	Moderate
Vernalis clay	27-47	0.2-0.6	0.14-0.18	6.6-8.4	Moderate
loam, wet	47-61	0.2-0.6	0.11-0.18	7.9-8.4	Low

Source: U.S. Dept of Agriculture Soil Conservation Service, 1978. Soil Survey of the Tracy-Midway Quadrangles.

Interference Between Agriculture and Other Land Uses

Location of urban-type land uses adjacent to and within productive agricultural areas impedes the use of many pesticides and herbicides needed by the farmer for maximum production. Use of or improper disposal of pesticides can cause contamination of domestic water supplies. Irrigation wastewaters can degrade surface water quality through the introduction of nutrients and leached mineral salts.

Agricultural burning in close proximity to urban development can create problems of eye irritation, and difficulty in breathing for people with respiratory ailments, and quantities of soot that settle over an area near the burn. Cultivation of fields when the soil is dry and the wind is blowing creates a nuisance for the nearby residences. Close proximity of residences to farms can lead to residents' complaints about noise resulting from farm operations.

4.1.5 Historic and Archaeologic Resources

(See the Plan Policies Report, Policy Area 26.)

Historic Resources

Although there are no State Historic landmarks or points of Historic Interest presently within the City, there are currently four structures on the National Register of Historic Places - the Tracy Inn, Old City Jail, Westside Bank, and Bank of Tracy. In addition, a historic survey of the community, conducted in 1977,⁴¹ established that an additional 41 structures, the original Town Plan of 1883 and the lower Central Historic District were also potentially eligible for National Register recognition. In the 1977 survey, buildings were rated exceptional, excellent, good, or background. The ratings were based on architectural, environmental, and historical/cultural importance. According to the survey analysis:

"All buildings rated as Exceptional should be considered as eligible for the National Register. In addition, other buildings in the survey could be considered on a case-by-case basis. Under the criteria of local significance, a building can be eligible if it has strong local cultural importance, one measure of which would be broad community support. The Town Plan of 1883 bound by East, West, South and Eleventh streets, is also eligible. It is an unusual plan and its distinctive street layout, including alleys, should be protected. Lastly, the area bound by East, West, and Sixth streets, and the alley between Ninth and Tenth streets, appears to be eligible for the National Register as a Historic District. As the earliest part of Tracy which is still intact, and which includes both residential and commercial buildings, it is the most important part of Tracy from Historical/Cultural, Architectural, and Environmental criteria, and qualifies as a National Register Historic District under criteria of local significance.

⁴¹Charles Hall Page & Associates, Inc., 1977 (October). Survey of Tracy's Architectural and Cultural Resources: (unpublished).

"Obvious candidates for building conservation zones are the areas west of West Street to Roosevelt Street, and Bervedor and Twelfth streets from Holly to East streets. Other potential building conservation areas will be evident from mapping the background buildings, as stated above. Conservation areas are determined under the same criteria as significant buildings. Most importantly, conservation areas are determined under criteria of environmental significance. The areas mentioned are areas that are not important for their individual works of architecture, but for their cohesiveness as older neighborhoods, measured by consistency of scale, style, setback, and landscaping. The area between West Street and Roosevelt Street fits all these criteria, with a variety of compatible styles from different periods. The Twelfth and Bervedor area fits these criteria, with its tree-lined streets its most outstanding characteristic.

"Although this survey ended in 1940 and was bound by the city limits, there were several interesting buildings and features in Tracy which were built past that date and outside of town, but which contribute to the distinctive fabric of the town and the area. Outstanding among the buildings are the Holly Sugar factory north of Tracy and the Heinz Company building, the Star Cafe, and Ralph's Club and Grill, all on East Eleventh Street. The Holly and Heinz buildings are important architecturally as well as historically, as long-time major employers in the area. Ralph's and the Star Cafe are part of the long stretch of automobile-related buildings, most of them post-war, stretched out along Eleventh Street from the western city limits to the Giant Orange east of town. These buildings date from the pre-freeway period in Tracy when the U.S. highway brought lots of through traffic. The diners, the drive-ins, and the gas stations from each decade since the 1930's remain from this period in surprisingly good condition. In any planning efforts in Tracy, this historic character of Eleventh Street should not be overlooked."⁴²

Table 4.1.4 lists all of the buildings in Tracy that were considered exceptional by the survey.

A number of problems can be encountered when attempting to designate historical sites and landmarks. Official historical site and landmark designation includes a commitment to following state restoration and maintenance codes, which may be opposed by property owners. In addition, eligible structures have often been neglected and may be deteriorated beyond repair. Local priorities for commercial, industrial, and residential development may also lead to the demolition of historic sites and landmarks. Such problems can however, be resolved. For example, in the City's implementation of the Housing and Commercial Rehab loan programs, in house procedures have been developed to ensure the mitigation of adverse impact. The procedures have been approved by the State Historic Preservation Office and Advisory Council on Historic Preservation.

⁴²Ibid.

TABLE 4.1.4
EXCEPTIONAL HISTORIC STRUCTURES, TRACY, CALIFORNIA

<u>Address</u>	<u>Date of Construction</u>	<u>Identifier (Name, Occupant, or Style)</u>
Central Avenue		
601 & 621	1899-1900	Guadalajara Club
628	1920-21	La Frontera
713	1923, remodeled 1947	Grand Theater
801	Ca. 1920	Bank of Tracy
Chester Drive		
16—(opposite Dr. Powers Park)	1921	Church
East 6th Street		
—	1912	Wm. Schmidt Building
27	1911-12	El Portal Cafe
35	1898	IOOF Building
West 6th Street		
47	1910-11	West Side Bank of Tracy
600	1911-12	Water Tank
West 7th Street		
25	Ca. 1900	VFW Building
East 10th Street		
Opposite City Hall	Ca. 1915	Water Tower
East 11th Street		
315	Ca. 1917	Tracy Adult School
West 11th Street		
24	Ca. 1926-27	Tracy Inn

Source: Charles Page & Associates, Inc., 1977 (October). Survey of Tracy's Architectural and Cultural Resources.

Archaeological Resources

The Tracy area was originally inhabited by the Yokuts Indians, part of the Penutian language family, which included tribes from the Central Valley, the San Francisco Bay, and the Pacific Coast from Marin County to Point Sur. The Yokuts inhabited the valley floor from the Tehachapi's to Stockton. Trade was common, and the Yokuts obtained obsidian from the Paiute and Shoshoni groups east of the Sierra Nevada and shell beads from the coastal people, probably from trading acorns.

The acorn crop, wild seeds and vegetables, and fish and game from the lush environment provided a varied diet. Houses were constructed from tules found in the marshes, and existing housepit depressions range in diameter from 3 to 18 meters.⁴³

In the early 1800's, Spanish expeditions into the area began to influence the native culture. The first Spanish land grant, Rancho Pescadero, dates to November 1843. The discovery of gold in the Sierra Foothills attracted large numbers of miners in the middle 1800's, and the Yokuts were driven from their homes along the streams and rivers. The decline of mining was soon followed by a shift to agricultural production and the remaining Yokuts were forced to leave the area for the mountains.⁴⁴

Very little archaeological reconnaissance work has been performed in the Tracy area, and literature on the subject is scarce. Four burial sites were recorded in 1939 when land leveling exposed skeletal material and artifacts. These sites—CA-SJo-0006, SJo-0007, SJo-0008, and SJo-0009—all within the Tracy planning area, indicate the possibility of the existence of additional sites within the area.⁴⁵ Additional archaeological surveys are needed for the Tracy area, but until such time as they are conducted, any artifacts or unusual amounts of stone, bone, or shell uncovered during construction should cause construction to be halted until an on-the-spot evaluation can be conducted by an archaeological consultant.

4.1.6 Energy Resources

(See the Plan Policies Report, Policy Areas 12, 14, 15, and 27; the Technical Supplement, Section 3.3.4; and the EIR, Section 2.3.)

Energy Consumption

During the 1970's, electrical consumption per residential customer increased at an average annual rate of 0.5 percent, while gas dropped an average of 2.5 percent per year (Table 4.1.5). Possibly, this reflects the conservation ethic that developed after the 1973 oil embargo as well as the state's residential building standards, which

⁴³ CH2M Hill & Jefferson Associates, Inc., 1980 (December). Draft Environmental Impact Report for Wastewater Treatment Plant Improvements, City of Tracy: Tracy.

⁴⁴ Ibid.

⁴⁵ Ibid.

TABLE 4.1.5
ELECTRICITY AND NATURAL
GAS SALES IN TRACY, 1970-1980

	<u>1970</u>	<u>1975</u>	<u>1980</u>	<u>% Change 1970-80</u>	<u>Average Annual % Change</u>
Electric Sales (In 1000 Kilowatt Hours)					
Residential	27,200	35,600	40,500	48.9	4.1
Individual	27,000	35,400	40,100	48.5	4.0
Master-Metered	200	200	400	100.0	7.2
Commercial ^a	27,800	35,100	36,200	30.2	2.7
Industrial	10,100	12,800	21,100	108.9	7.7
Agricultural	20	10	10	(50.0)	(6.7)
Street Lighting	800	900	1,000	25.0	2.3
PG&E	<u>30</u>	<u>20</u>	<u>10</u>	<u>(66.6)</u>	<u>(10.4)</u>
TOTAL	65,950	84,430	98,820	49.8%	4.1%
Natural Gas Sales (In 1000 Therms)					
Residential	4,300	5,300	4,500	4.7	0.5
Individual	4,200	5,100	4,300	2.4	0.2
Master-Metered	100	200	200	100.0	7.2
Commercial	1,600	1,600	2,100	31.3	2.8
Industrial	7,600	11,100	10,300	35.5	3.1
PG&E	<u>b</u>	<u>b</u>	<u>b</u>	<u>0.0</u>	<u>0.0</u>
TOTAL	13,500	18,000	16,900	25.2%	2.3%

^aIncludes some light industrial customers.

^bNegligible use (1000 therms or less).

Source: Pacific Gas and Electric Company.

require energy-conserving building design and construction. The average consumption of electricity and natural gas by the Tracy residential customer was slightly lower than in either the county or the PG&E service area as a whole (Table 4.1.6).

Land Use Patterns

Practical policies to reduce travel include encouraging a compact urban form, increasing densities, and establishing neighborhood convenience centers that eliminate some vehicular shopping trips. Tracy now has two urban neighborhoods and two rural neighborhoods in the planning served by small grocery stores.

Subdivision Design

The California Government Code (sections 66473.1 and 66475.3) require that subdivision design shall provide to the extent feasible, for future passive heating and cooling opportunities, including lot size and configuration, and building orientation. These statistics also enable local jurisdictions to require by ordinance, as a condition of tentative map approval, easements for assuring each unit's right to receive sunlight. Subdivision design should enable the home designer to take maximum advantage of passive and active solar design, provide for future retrofit, and allow for appropriate localized wind energy generation.

Lot Orientation. Lots should be oriented to allow houses to be built with the major portion of roof and wall area exposed to the south, and minimum glass area exposed to east and west summer sun. In planning for lot orientation, the potential placement of buildings in reference to the sun patterns, wind patterns, temperature, and humidity should be considered.

Lot Size. Lot size should be large enough to provide a building envelope that can take maximum advantage of energy savings (primarily passive and active solar applications). In urban areas, the lot sizes should be as small as possible to provide for the highest density allowed while permitting access to sunlight. Small lot sizes may also take advantage of zero side yards and reduced front setbacks. In non-urban areas, the lot size should be large enough to take into consideration prevailing wind, sun inclination, and topography. A vertical building envelope should be located on the lot in a manner that prevents it from shadowing adjacent buildings.

Local Street Width and Orientation. Streets are normally designed to provide parking on each side plus enough width for easy two-way traffic. This width is beneficial in providing easy access by fire, garbage, and other large vehicles. However, the practice of building wide streets makes pavement very hard to shade, and allows considerable heat to radiate from dark road surfaces. Unshaded or poorly shaded streets discourage cyclists and pedestrians. Narrower streets save energy by requiring less materials (mostly asphalt), and provide more opportunity to plant trees capable of shading the entire street, a practice that can lower the temperature in the surrounding area by up to 10°F in hot summer climates.

TABLE 4.1.6
COMPARATIVE ENERGY SALES IN CITY OF TRACY,
SAN JOAQUIN COUNTY, AND PG&E SYSTEM, 1980

	<u>Total^a</u>	<u>Industrial</u>	<u>% of Total</u>	<u>Commercial</u>	<u>% of Total</u>	<u>Residential</u>	<u>% of Total</u>	<u>Residential Per Customer</u>
<u>PG&E System</u>								
Electricity ^b	58,366,200	14,801,300	25.4	17,983,700	30.8	19,329,200	33.1	6.5
Natural Gas ^c	7,977,600	1,690,200	21.2	1,520,600	19.1	2,243,600	28.1	0.9
<u>San Joaquin County</u>								
Electricity ^b	2,414,400	448,600	18.6	688,900	28.5	789,600	32.7	7.1
Natural Gas ^c	233,900	109,100	46.6	40,200	17.2	84,000	35.9	0.8
<u>Tracy</u>								
Electricity ^b	98,800	21,100	21.4	36,200	36.7	40,500	41.0	6.1
Natural Gas ^c	16,900	10,300	61.2	2,100	12.3	4,500	26.5	0.7

^aFigures do not add due to rounding and exclusion of other use sectors such as agricultural, street lighting, PG&E system, etc.

^bIn 1000 kilowatt hours.

^cIn 1000 therms.

Source: Pacific Gas & Electric Company.

Generally speaking, east/west streets provide the best opportunity for introducing energy conservation into lots and buildings. Street access from east-west streets to the north side of the lot allows private south yards, close house access to the street, and eliminates shading conflicts from street trees. However, street access from east-west streets to the south makes dealing with car storage or parking difficult.

Emergency vehicle access must be provided in street designs. Local streets should be designed so that there is room for passing of two-way traffic in emergency situations.

Street Lighting. Street lighting is one of the highest single energy cost for a city. Street lights are important for neighborhood safety and should be designed both for the site and for energy conservation. Street lighting should be coordinated with street tree planting to reduce the possibility of trees blocking the lights. Use of the more energy efficient types of street lamps should be considered.

Parking. Parking requires special attention when considering ways of conserving energy. It is assumed that for some time to come, the automobile will be the primary mode of travel and that two parking spaces per dwelling are needed. Current street design standards provide for parking on both sides of the street, requiring extra street width (with the extra expense and extra energy consumption of building materials) to provide for occasional extra parking at varying locations along the street. It would be less wasteful of energy to design streets with limited parking lanes and to design sufficient off-street parking to handle the occasional extra parking for visitors.

Generally, a carport located close to the street is the most energy-efficient and site-efficient method of providing on-site parking. In the Tracy climate, a carport is generally sufficient for the protection of the automobile and occupants. When driveways are needed, dark colored pavement and shading of pavement should be considered, so that the driveway does not increase the heat or improperly reflect sunlight to raise temperatures in and around the house.

Landscaping. Energy conservation requires a careful process of selecting the right kind of trees and shrubs for the right location. Landscape design must be a part of the subdivision development and building design process rather than an afterthought after the house or structure is built. Trees should provide summer shade to paved areas and dwellings. Buildings are generally 15 to 20°F cooler in the shade of a tree than in direct sun. However, trees should not shade these areas in the winter, to bring in extra light and warmth. Trees can be used as windbreaks on the north side, reducing heat loss from buildings during winter.

Trees to be used for street trees or for shading parking areas should have the following characteristics:⁴⁷

- should be deciduous;
- should cover at least 50 percent of the paved area at maturity;
- should be long-lived (over 60 years);
- should grow high and spread wide naturally;
- should do well in urban environment
 - pollution tolerant
 - tolerant to direct and reflect heat;
- Should require little maintenance
 - strong
 - insect- and disease-resistant
 - require little pruning
 - able to survive a year or two of drought.

Building Setbacks. Private yard space should be provided to the south of dwellings whenever possible. This allows for solar access to the south wall and provides the best location for recreation and gardens. Also, the more space available to the south between the dwelling and the neighbor's yard, the less likelihood there is of the neighbor's trees shading the dwelling or the south wall.

Solar access to each building is critical. Building setbacks should enhance solar access. Setbacks to form a building envelope on each lot can vary in order to take solar access into account.

Front setbacks should take into consideration the need for on-site parking, deciduous tree shading of southern exposure, and need for rear southern exposure of dwellings or adjacent dwellings.

46 Santa Clara County Energy Task Force, 1978 (November). Design Guidelines: Energy Conservation in New Residential Subdivisions.

Eliminating side yards (zero lot lines) to provide for common wall construction can significantly reduce energy consumption by decreasing the potential for heat gain or loss from the outside surface area of buildings exposed to warm or cold air. This concept combines the desirability of the detached single-family house with higher density.

Mixed Housing Type. Mixing of housing types and clustering of buildings can save considerable energy. Multi-family units use up to 30 percent less energy than single family detached units for the same square footage.

Clustering can save energy in several ways. Buildings can be located to channel or dissipate prevailing breezes or wind. Street length and public utility lines can be shortened, and less paving is needed. It may also be possible to develop common active solar systems or joint wind-generating facilities.

Building Design⁴⁸

The four major elements that affect human comfort are air temperature, solar radiation, wind, and humidity. There is a range of climatic conditions most people regard as comfortable. A building logically should try to insure these conditions. Comfort can be achieved through appropriate design or through mechanical energy consuming means. Good design can greatly reduce or eliminate the amount of energy needed by mechanical devices.

In hot, arid climates, the following measures are important for mitigating climatic extremes:

1. Shading of glass surfaces (by trees or exterior shading devices);
2. Reducing infiltration, insulating;
3. Ventilated roof construction and altered roof construction (to increase overhangs for shade);
4. Building orientation (with long building side facing south);
5. Natural building ventilation;
6. Landscaping and wall shading;
7. Masonry walls or other measures to increase building heat storage capacity;
8. Ventilation of heat-producing appliances (stoves, dryers, refrigerators).

Air Leakage. Approximately 40 percent of all heating and cooling losses are a result of leakage through cracks or small openings at joints between floors, ceiling, and roof or around poorly fitted windows and doors. Another 54 percent occurs by heat conduction through windows, walls, the foundation, and ceiling. The remaining 6 percent is conducted through framing and doors. These findings indicate the importance of careful building techniques, weather stripping, caulking to reduce air leakage, the use of proper building materials, and adequate insulation to restrict conductive heat losses.

47 This section is excerpted from: San Joaquin County Council of Governments, 1977. Building, Design, Orientation, and Operation to Conserve Energy.

Insulation. In the heating season, adequate insulation in the attic and under floors will save up to 30 percent on heat energy. In an air-conditioned home, summer energy savings can be as much as 10 percent.

State and federal government energy legislation has concentrated on increasing insulation standards and on retrofitting existing homes with adequate insulation because it is a cost-effective and simple way to reduce building energy consumption without any life-style changes. The California Administrative Code, Title 24, sets standards for energy conservation in newly constructed buildings.

Building Materials. Building materials differ greatly in their energy-saving qualities. Table 4.1.7 describes three energy-related qualities of various building materials.

Building materials also vary in the energy it takes to manufacture them. A ton of steel consumes only one-sixth the energy necessary to produce an equivalent amount of aluminum. Recycling, however, can cut energy use. Recycled aluminum consumes only 5 percent of the energy needed to produce "new" aluminum.

Increasing mass by use of masonry or other materials on walls or floors will increase the heat storage capacity of a building. This helps hold the sun's heat and keep a home warmer in winter. For example, dark masonry walls opposite large windows can be warmed by sunshine during the day. They will hold the heat and radiate it out at night into the room. During summer months, these walls can be shaded from the sun.

Heavy building materials also help even out building temperature fluctuations. Extensive use of masonry will delay outside peak heat impacts until cooler nighttime hours and carry the nighttime cool temperatures to the daytime heat peak.

Light colored roof materials should be used. Light colors will reduce building heat gain in summer since they tend to reflect rather than absorb heat. Light colored roofs can be 60° cooler in the summer than a dark material. Aluminum roofing is also good as it reflects as much radiation as it absorbs. Roofs should be shaded by deciduous trees located on the east and west to reduce summer heat gain.

Roof construction should also consider the provision of adequate overhangs on the south to shade south-facing windows and walls during summer months.

Very often roofs and attics are poorly insulated, allowing attics to heat up tremendously and radiate heat down into the house. Recommended roof insulation for San Joaquin County is "R-19." The "R-19" insulation value can be achieved by installing 5 3/4 inches of cellulose fiber, 6 inches of fiberglass batts, 6 3/4 inches of blowing rock wool, or 8 3/4 inches of blowing fiberglass.

Proper attic ventilation can reduce heat gain through the roof by 20 percent or more. Inexpensive attic fans, which may be thermostatically controlled to automatically operate when temperatures reach a certain level, will reduce attic hot air.

These East and west walls should be painted light colors or shaded with deciduous vegetation. walls receive much more heat in summer than south walls since south walls intercept solar rays at less direct angles. All walls should have at least "R-11" insulation (3 to 4 inches). If they don't, insulation can be added when new siding is put on the house, or holes can be drilled into the walls to pour or blow in insulation.

TABLE 4.1.7
ENERGY SAVING QUALITIES OF VARIOUS BUILDING MATERIALS

Building Materials:

Building materials differ greatly in their energy saving qualities. The following chart describes three energy-related qualities of various building materials.

	Energy Saving Qualities of Various Building Materials		
	Resists Wind Infiltration	Insulation Value	Thermal or Heat-Holding Capacity
<u>Stone</u>			
field stone	G	P	E
cut stone	E	P	E
slate floor	G	P	E
slate roof	A	P	E
<u>Brick</u>			
walls	E	P	E
paving/floors	-	P	E
<u>Concrete</u>			
reinforced	E	P	E
masonry block	E	P/A	G/E
precast	G	P	E
<u>Tile</u>			
roof	G	P	G
floor/paving	-	P	A
<u>Earth</u>	E	G	E
<u>Steel</u>	G	U	P
<u>Aluminum</u>			
roof	G	-	-
siding	E	A/G	P
<u>Untreated Glass</u>	E	U	U
<u>Insulation</u>			
fiberglass	A	E	P
rock wool	A	E	P
vermiculite	A	E	P
cellulose (treated wood fiber)	A	E	P
metal foil	E	G	-
<u>Plaster</u>			
exterior stucco	E	P/A	G
interior	E	A	G
gypsum board	E	A	A
<u>Asphalt</u>			
shingles	E	P/A	-
roll roofing	E	-	-
<u>Wood</u>			
shingles, roof	E	A	P
siding (shingles, clapboard, vertical boards)	E	A	P
floors	-	A	P
panelling	E	A	P
plywood, particle board	E	A	P
composition sheathing board	G	G	P

Legend:

- = not rated
E = excellent
G = good
A = average or adequate
P = poor
U = unsatisfactory
P/A = indicates range

Windows. The most vulnerable portion of a wall to heat loss and gain is the window. As much as 50 percent of the heat loss and gain in most houses is through the windows. This is because the short wavelength of sun rays allows them to penetrate glass as if it wasn't there. Once inside, the wavelength becomes elongated and cannot escape in the same manner, resulting in heat buildup.

Direct solar heat gains are a major problem in the summer, with east- and west-facing windows being most vulnerable. Every 100 square feet of unshaded glass in a home or office requires one ton of air conditioning to expel the sun's heat. Since the peak load for electric demand in Northern California corresponds to the peak demand for air conditioning, an extra ton of air conditioning will increase the peak-hour demand on the electric utility system by approximately two kilowatt hours. The choice is to buy an additional ton of air conditioning for a house at a cost of \$250 and spend around \$2,000 to increase the electrical generating capacity by two kilowatt hours, or eliminate the solar radiation coming through the windows by shading them. Windows are most effectively shaded by trees, building overhangs, or exterior shading devices. Interior shades are not usually very effective, although they will reduce solar transmission somewhat. Shutters and shades should be light colored to reflect rather than absorb heat.

Overhangs are very useful for south exposures. East and west exposures require excessive width of horizontal overhangs to be effective (although vertical overhangs are possibilities). Both external shades and overhangs can reduce solar heat gain as much as 80 percent.

In the winter, much of the internal heat goes out the windows since regular window glass provides little or no insulation. Windows lose 20 times more heat than insulated walls. A double-pane window is better, but still loses eight times more heat than the wall. In the winter, sealed interior insulated shutters or drapes can be effective by creating a dead air space that helps keep heat inside.

To be energy efficient, increasing the insulation value of the window glass is important. Several types of glass hold particular interest in relation to energy conservation.

Tinted glass is often used to reduce glare in a building, but it also reduces solar transmission in cold weather at a time when some heat from the sun would be most welcome. It also reduces light levels even when light is desired. This lack of flexibility is a primary disadvantage of tinted glass and must be weighed against its potential energy savings.

Reflective metallic coatings can block any amount of solar heat and light. Combined with dual-pane insulating glass, a reflective coating can be used to keep heat in or out of a building virtually as desired.

Double- or triple-paned glass can effectively reduce heat transmission regardless of the kind of glass used. Double glazing uses two panes of glass, with an insulating air space between them.

Window frames also play a role in heat loss. Wood frame windows are twice as energy efficient as aluminum frame windows because wood is far superior to metal as an insulator.

TABLE 4.1.7
ENERGY SAVING QUALITIES OF VARIOUS BUILDING MATERIALS

Building Materials:

Building materials differ greatly in their energy saving qualities. The following chart describes three energy-related qualities of various building materials.

	Energy Saving Qualities of Various Building Materials		
	Resists Wind Infiltration	Insulation Value	Thermal or Heat-Holding Capacity
<u>Stone</u>			
field stone	G	P	E
cut stone	E	P	E
slate floor	G	P	E
slate roof	A	P	E
<u>Brick</u>			
walls	E	P	E
paving/floors	-	P	E
<u>Concrete</u>			
reinforced	E	P	E
masonry block	E	P/A	G/E
precast	G	P	E
<u>Tile</u>			
roof	G	P	G
floor/paving	-	P	A
<u>Earth</u>	E	G	E
<u>Steel</u>	G	U	P
<u>Aluminum</u>			
roof	G	-	-
siding	E	A/G	P
<u>Untreated Glass</u>	E	U	U
<u>Insulation</u>			
fiberglass	A	E	P
rock wool	A	E	P
vermiculite	A	E	P
cellulose (treated wood fiber)	A	E	P
metal foil	E	G	-
<u>Plaster</u>			
exterior stucco	E	P/A	G
interior	E	A	G
gypsum board	E	A	A
<u>Asphalt</u>			
shingles	E	P/A	-
roll roofing	E	-	-
<u>Wood</u>			
shingles, roof	E	A	P
siding (shingles, clapboard, vertical boards)	E	A	P
floor	-	A	P
panelling	E	A	P
plywood, particle board	E	A	P
composition sheathing board	G	G	P

Legend:

- - not rated
E - excellent
G - good
A - average or adequate
P - poor
U - unsatisfactory
P/A - indicates range

A further way to reduce window heat loss is to reduce window size. Reducing the area of window space does not cut available natural light equally. If the amount of glass planned for a building is cut by one-third, the natural illumination is cut by only one-fourth and the result is proportionately more light and less heat loss.

Ventilation. Since Tracy has cool summer evenings with a 58° minimum average temperature, and since sea breezes typically come up in the late afternoon and early evening, natural and fan-assisted ventilation can play an important role in cooling residences at much less cost than air conditioning.

Ventilation depends on differences in air pressure. A suction must be established from one side of the house to the other to encourage air movement. To create a ventilating suction, the leeward side should have larger openings than the windward side. Fans can aid in creating the ventilating suction. At night, there are two ways to pull cool air into the house. A fan can either be placed in an open window, pulling cool air into that room, and eventually pushing warm air in other rooms out the open windows. Or the fan can be placed to blow hot air from a room to the outside. With windows in other rooms open, cool air will be sucked in through the windows of those rooms, cooling them first and eventually reaching the room where the fan is located. This technique pulls cool air into the house through several windows at once.

The average window fan consumes approximately 200 watts, and a smaller circulating or oscillating fan uses about 90 watts of power. Running a window fan for five hours requires one kilowatt hour of electricity, the same amount that is needed to operate an 18,000 btu/hour window air conditioner for 20 minutes.

Ventilation patterns can also be established from low openings to high. Openable vents in the ceiling that allow the warm air to rise up and out of the house while drawing in cool air are helpful. Fans can also aid in this process. A type of fan called a "whole house" fan pulls outside air in through open windows and doors and exhausts it through the (well-ventilated) attic. This provides a gentle breeze through every window, eliminating the need for air conditioning on most summer days.

Lighting. Artificial lighting systems consume large quantities of energy. In low rise, non-residential buildings, lighting can consume up to 60 percent of the supplied electrical power. Lighting systems account for approximately 7 percent of electrical energy consumed for residences. Because lights give off heat, they also add to building cooling loads in hot weather.

Maximizing use of daylight through high placement of windows and light colored, reflective interior walls; improving lighting maintenance; and turning off unnecessary lights are three ways to save energy.

Using efficient sizes and types of lighting will also bring about energy savings. Several rules of thumb follow:

- Larger bulbs are generally more efficient than smaller ones. For example, two 60-watt bulbs provide the same light as one 100-watt bulb. It is, therefore, better to use one large bulb in place of two smaller ones.

- Longer fluorescent bulbs are more efficient than shorter ones since they lose efficiency at their ends. One eight-foot tube will thus be more efficient than two four-foot ones.
- Fluorescent tubes are much more efficient than incandescent bulbs. A 40-watt fluorescent tube gives off the same light as a 100-watt incandescent bulb and lasts 10 times longer. They also give off less heat.

Heating and Cooling. The setting of the thermostat can have a very significant impact on heating bills. Generally, changing the thermostat 1° will change heating requirements by about 3 percent. Thus, if a building thermostat is normally set at 70° , lowering it to 66° will save 12 percent on heating bills. Increasing it to 71° will add 3 percent to the heating bill.

As a rule of thumb, thermostats should not be lowered at night more than 10 percent below the daytime setting or the building cools off and requires large amounts of energy to reheat. Lower settings are appropriate when buildings are unused for more than a day.

For cooling, thermostat settings are also very important. Each degree over 70° will save about 4 percent in energy requirements. A setting of 78° will save 32 percent of the energy required to cool the building to 70° . Thermostats should be left high early in the summer so that occupants become used to the temperature. Later, when outside temperatures are very hot, 78° feels cool.

For both heating and cooling equipment, a general rule is to not buy oversize units. Units operate more efficiently when they are operating continuously.

Also:

- Choose air conditioning units with a high Energy Efficiency Ratio (EER). An EER of 10 is excellent; 8 to 10 is very good; 7 to 8 is good. A unit with an EER of 8 uses 30 percent less energy than one with an EER of 5.6.
- Protect outdoor cooling units from the sun so that air going into the air intake is cooler.

In San Joaquin County's hot, dry summer climate, an evaporative cooler is a more energy efficient alternative to air conditioning as is natural or fan-assisted ventilation.

Water Heating. After heating and cooling, water heating is the largest home energy consumer. Water heating bills can be reduced by:

- Wrapping the hot water heater in insulation.
- Insulating hot water pipes.
- Setting water temperatures no higher than 140° .
- Turning the hot water off when away on vacation.
- Installing an automatic thermostat to turn the water temperatures down at night and up again in the morning.

Water conservation will also save energy in pumping and in sewage treatment of the water after it has been used.

(Note: This section of the quoted report, does not include a reference to solar water heaters, which obviously, will substantially reduce such bills.)

Transportation and Energy Use

Transportation currently consumes 34 percent of all energy used in California, the largest single use of energy.⁴⁹ While inefficient use is a national, and perhaps a worldwide, problem, steps toward conservation can and should be initiated locally without waiting for federal and/or state energy policies, guidelines, and directives. In Tracy, excellent opportunities exist to reduce waste by consolidating vehicle trips, reducing trip time and length, improving traffic flow, and increasing vehicle occupancy.

Vehicle Miles Traveled/Person Miles Traveled. To reduce the amount of gasoline used by a vehicle, it is necessary to reduce the number of miles traveled by each vehicle. Reducing vehicle miles traveled (vmt) is the objective of many conservation measures.

Reducing the number of automobile trips by eliminating the need for motorized travel is only one way to cut back vmt. If certain land uses such as houses and stores can be mixed together, the need to use an automobile for some shopping trips is eliminated. If people can walk to the drugstore or drycleaner, the total number of car trips will diminish.

Another way of reducing vmt is to attract people to high occupancy vehicles such as car/van pools and buses. This strategy focuses on how the individual travels, rather than on the length or number of trips made. The underlying energy principle is that a full car uses gasoline more efficiently than a car carrying only one or two people.

Making Travel More Efficient. Improving traffic flow on the existing street/freeway system is another way of reducing gasoline consumption. Stop-and-go travel is extremely wasteful of energy. Cars function most efficiently at a constant cruising speed of around 45-55 miles per hour. A group of measures such as timed traffic lights and metered freeway on-ramps have been developed to prevent tie-ups and bottlenecks.

These measures, however, could conflict with others designed to lure people out of their cars into public transit. If traffic flow is improved, there is less incentive to switch into public transit. For this reason, programs to improve traffic flow are often combined with measures that give buses and car/van pools preferential treatment on streets and freeways.

Measures to Increase Vehicle Occupancy. This group of measures promotes use of high occupancy vehicles, and includes many of the incentives needed to lure people from their private automobiles.

1. Car Pool Matching and Information Program. Manual or computerized matching systems can be used to identify common travel patterns and help workers form car pools for home/work trips. Advertising and publicity campaigns to increase public awareness are important aspects of a successful car pool matching

⁴⁸ County of Santa Clara Planning Department, 1978 (July). Executive Summary: Implications of Land Use and Transportation Issues.

program. RIDES For Bay Area Commuters, Inc. is a carpool matching system operated by CalTrans in the Tracy area.

2. Van Pool Program. A van is used by groups of employees for commute trips. The van may be owned or sponsored by the employer, and the pool members share the van's operating and maintenance costs.
3. Car/Van Pool Incentives. This measure is a combination of techniques to make commuting by car/van pools attractive. The measure can consist of a variety of cost and convenience incentives such as reduced or free parking fees and preferential, close-in parking. Shorter working hours or flexible hours can also be used as incentives to car pooling and van pooling.
4. Commuter Bus Pool Program. This technique involves a subscription bus service provided by either a public or private transit operator. The riders subscribe for daily bus service to major employment centers from their residential area.
5. Dial-A-Ride. A dial-a-ride system allows a rider to telephone in advance for door-to-door bus pickup and delivery. Dial-a-ride, which does not follow fixed routes like more conventional buses, can be used for both commute and non-commute travel. It is a "bus-taxi" system.

Tracy subsidizes both a dial-a-ride bus and a taxi service. (See Section 2.7, Circulation, for a description of these services).

Measures to Improve Traffic Flow and Operations. Energy savings can result from smoother traffic flow and less engine idling on freeways and local streets. These measures improve traffic flow by changing peak travel periods and making physical changes to freeways and local streets.

1. Staggered/Flexible Work Hours. Variable work schedules can reduce congestion by distributing commute travel over a longer time period.
2. Synchronized Traffic Signals. Traffic signals along major streets can be synchronized and coordinated to facilitate traffic flow and minimize bottlenecks at key intersections.
3. Traffic Circulation Improvements. These traffic flow improvements consist of installation of left turn signals and turn lanes, removing on-street parking, and separating bus stops from traffic.

4.2 NOISE ELEMENT

(See the Plan Policies Report, Policy Area 28.)

This section is based on the 1978 Noise Element prepared by the San Joaquin Council of Governments as adopted by the City of Tracy in January 1979. Portions of the 1978 Noise Element that pertain to areas of the county other than the Tracy planning area have been eliminated and the description of the community noise environment has been revised to reflect the situation in 1981.

4.2.1 Introduction

Why Noise Control is Important

The many harmful or disturbing effects noise can have on people make it important for Tracy to alleviate noise problems and to avoid creation of new noise-related problems.

Effects of Noise on People

Hearing Loss. The function of the ear is to convert sound energy into nerve impulses. As sound waves enter through the outer ear and eardrum, the middle ear muscles contract or expand to increase or diminish sounds entering the delicate inner ear. However, this middle ear reflex is imperfect since it cannot adequately protect the inner ear against very loud, impulsive, or sustained noises.

When sounds are too intense and prolonged, the hearing receptor cells, or "hair cells," can be damaged. The inner ear (cochlea) is a coiled tube about 34 millimeters long, containing about 17,000 hair cells.

Hearing loss can occur along parts or all of the cochlea. Thus, the degree of hearing loss depends not only on the severity of injury at any one location, but upon the spread of hearing loss in the inner ear.

Hearing loss usually occurs above speaking ranges and spreads downward. Damage can, therefore, be substantial before hearing loss is noticed.

Most scientists believe that noise levels of 70 dBA or more contribute to loss of hearing over a lifetime. Clear evidence is available that noises above 80 dBA can contribute to inner ear damage and eventually hearing loss if they are frequently and regularly encountered. Trucks, trains, sport cars, and motorcycles all exceed 80 dBA at 50 feet. Amplified music at close range may reach 120 dBA. In industry, excessively loud machinery is often the norm.

About 20 million people in the United States are presently estimated to have some degree of hearing loss, and the rate of hearing loss is increasing, in part, due to increased societal noise levels.

Even where daily exposure to community noises may not pose a distinct hazard in itself to hearing, it may increase individual hearing loss by making it impossible for a worker in a noisy factory to find enough off-job quiet to allow the ears to recover each evening.

Hearing loss can be eliminated if exposure to noise is held to sufficiently low levels, held to sufficiently short durations, and allowed to occur only rarely. But regulation of a person's total exposure to noise is impossible to achieve. Reducing noise levels of the noise source is a better approach. Clearly, quieting all noise sources to 70 dBA or less is impossible at present. On the other hand, allowing loud noise sources to continue to proliferate without bound would lead to far greater problems in terms of hearing loss and other adverse effects of noise. As a goal from a hearing conservation standpoint, it is desirable to have as few noise sources as possible that expose people to sound levels in excess of 70 dBA.

Speech Interference. Another direct effect of noise is masking, where unwanted sounds interfere with wanted signals, such as speech. Speech interference begins occurring at about 40-45 dBA and becomes severe at 60 dBA and above (see Figure 4.2.1). The relationship shown in the speech interference table is for young adults with normal hearing speaking the same dialect. Children under about 13 years of age, the elderly, hard of hearing, and people with dialect differences are likely to require quieter conditions than those indicated on the chart.

Excessive background noise can reduce the amount and quality of verbal exchange and adversely affect education, family life-styles, occupational efficiency, and the quality of relaxation.

Sleep Interference. To protect a person from sleep interference (see Figure 4.2.2), sound levels should not rise above 35-40 dBA. Whether a person is actually awakened by a particular noise will depend on noise levels, characteristics of the noise, stage of sleep, the person's motivation to awaken, age, sex, and so on. Elderly people and persons who are ill are particularly susceptible to sleep interference caused by noise.

Physical Reactions. Temporary physical reactions to passing noise include:

(at most levels)

- an orientation reflex
- a startle reflex

(at about 70 dBA and above)

- constriction of the peripheral blood vessels
- acceleration or deceleration of the heart rate
- dilation of pupils of the eye
- changes in breathing patterns
- changes in movement of the gastrointestinal tract
- changes in secretion of saliva and gastric juices
- chemical changes in the blood and urine

(at higher levels)

- loss in visual acuity
- disturbance of equilibrium

It is proposed, and evidence exists, that chronic arousal of such physical responses could aggravate the incidence of medical problems such as headaches, fatigue, digestive disorders, heart disease, blood circulatory disorders, and equilibrium disorders.

It is also proposed that noise as a source of stress is a likely contributor to what many medical authorities believe are stress-related diseases such as ulcers, high blood pressure, heart disease, and arthritis.

As a source of stress, noise may also be a contributing factor in mental illness, anxiety, and psychological distress.

Table 4.2.1 describes the noise effects of various sound sources and Table 4.2.2 shows typical noise levels from various sources.

Performance and Learning. Work performance can be adversely affected by noise through distraction and through the physical reactions previously described. While noise does not seem to have an effect on overall work productivity, it can reduce accuracy of work, particularly of complex tasks, and inhibit learning. Even if it does not do this, the price may be increased fatigue, distraction, and irritability on the part of the employee or student. Studies conducted in Europe recommend 55 dBA as an upper limit for peak-interfering noise in classrooms.

Privacy. As a result of a lack of acoustical privacy, people may experience annoyance, sleep interference, speech interference, and all other detrimental effects of noise. Nearly everyone has experienced this effect at one time or another in apartments, hotels, or motels. In multi-unit structures, careful attention to building materials and construction techniques at separating walls and floor/ceilings is necessary to provide acceptable interior living environments.

Psychological. Facts clearly support the contention that noise can be a source of psychological distress through annoyance, speech, sleep interference, etc. This distress, in turn, can lead to instability, sexual impotency, headaches, nausea, general anxiety, and changes in general mood.

Annoyance. A large number of factors govern how annoyed people will be by noise. First, there are characteristics of the noise itself, i.e., its loudness and duration, whether it is impulsive or steady, contains speech or music, or piercing "pure tones." Second, background noise levels help in determining how "intrusive" and thus annoying a particular noise is.

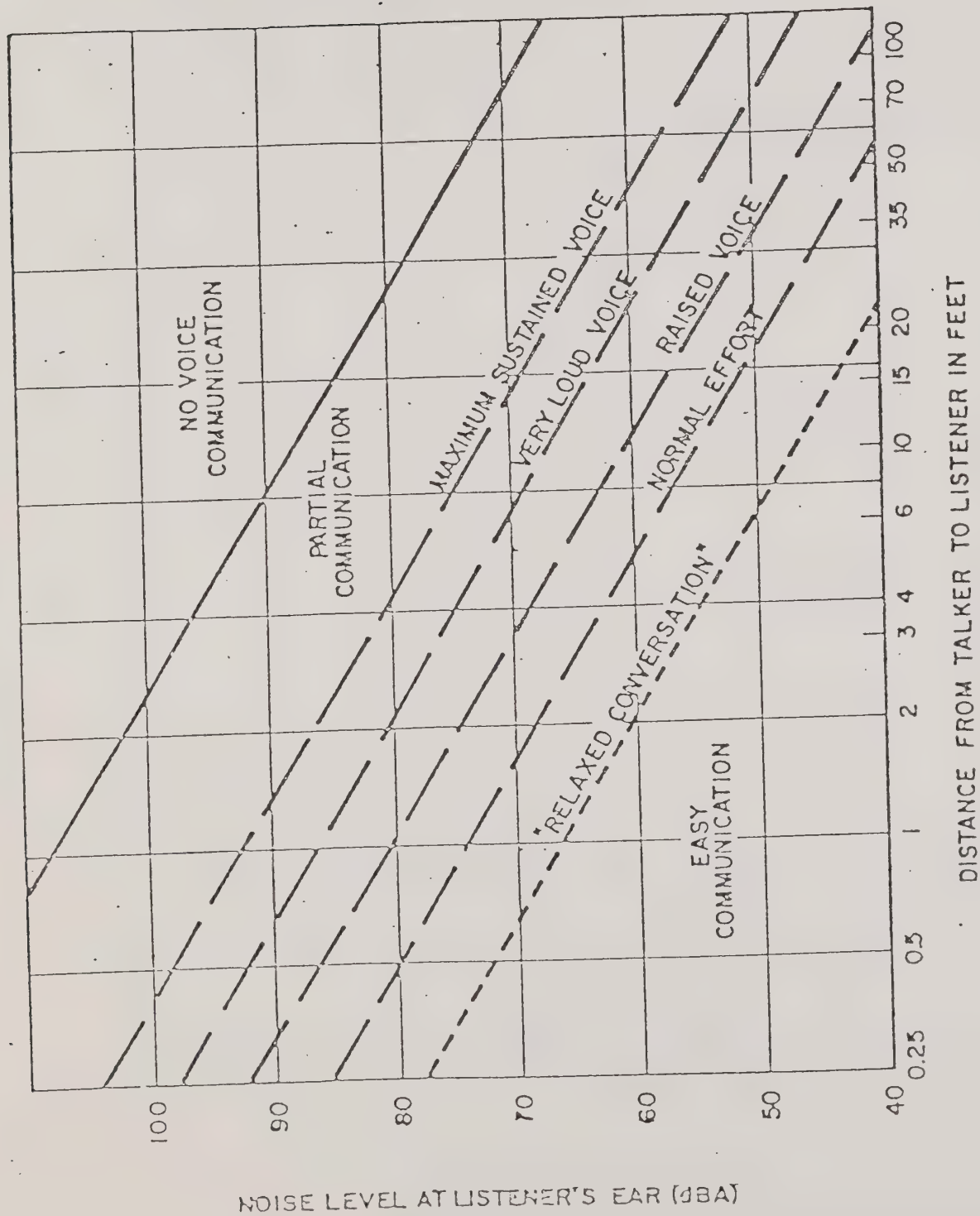
Third, place, time of day, and seasonal variations can make a difference; people are most likely to be disturbed at home, at night, and during warm weather. Finally, a person's actual total exposure to the noise source, and his or her attitude toward it, may play a part.

The number of people disturbed by noise generally goes up as noise levels increase. Predicting annoyance response to noise in particular situations, however, is difficult. Individuals who complain are generally not unusually sensitive to noise. They do tend to have a higher socioeconomic status and a better education than those who do not complain, but there are few other guidelines. Communitywide annoyance response also depends on leadership within that community and a sense of community.

TABLE 4.2.1
DECIBEL REFERENCE CHART

<u>Sound Source</u>	<u>Decibels</u>	<u>Noise Effects</u>
Jet plane (100 ft.)	130	
	120	Painfully loud, rapid hearing loss.
Amplified rock music	110	
Automatic punch press (3 ft.)		
Shout (6 inches)	100	Maddening sound.
Jackhammers (50 ft.)		Evidence that noise can interfere with work performance.
Diesel locomotive (50 ft.)		
Motocycle (50 ft.)	89	Federal industrial 8-hour exposure limit.
Heavy truck (50 ft.)		Well established that noise levels this high contribute to hearing loss.
Power lawn mower (3 ft.)		
10-HP outboard (50 ft.)	80	Noise very annoying.
Standard passenger car (50 ft.)		
Interior of department store	70	Noise level for potential hearing loss begins; hard to use phone. Stress reactions become obvious.
Dishwasher, clotheswasher, stove fan (operator's distance)	60	Noise intrudes on normal speech at distances greater than 5 feet.
	50	Some speech and sleep interference.
Average business office		
Living room (no T.V.)	40	
Bedroom		Sleep undisturbed.
Whisper (15 ft.)	30	Very quiet
Broadcast studio	20	
	10	Sound just audible.
	0	Hearing limit.

SPEECH INTERFERENCE

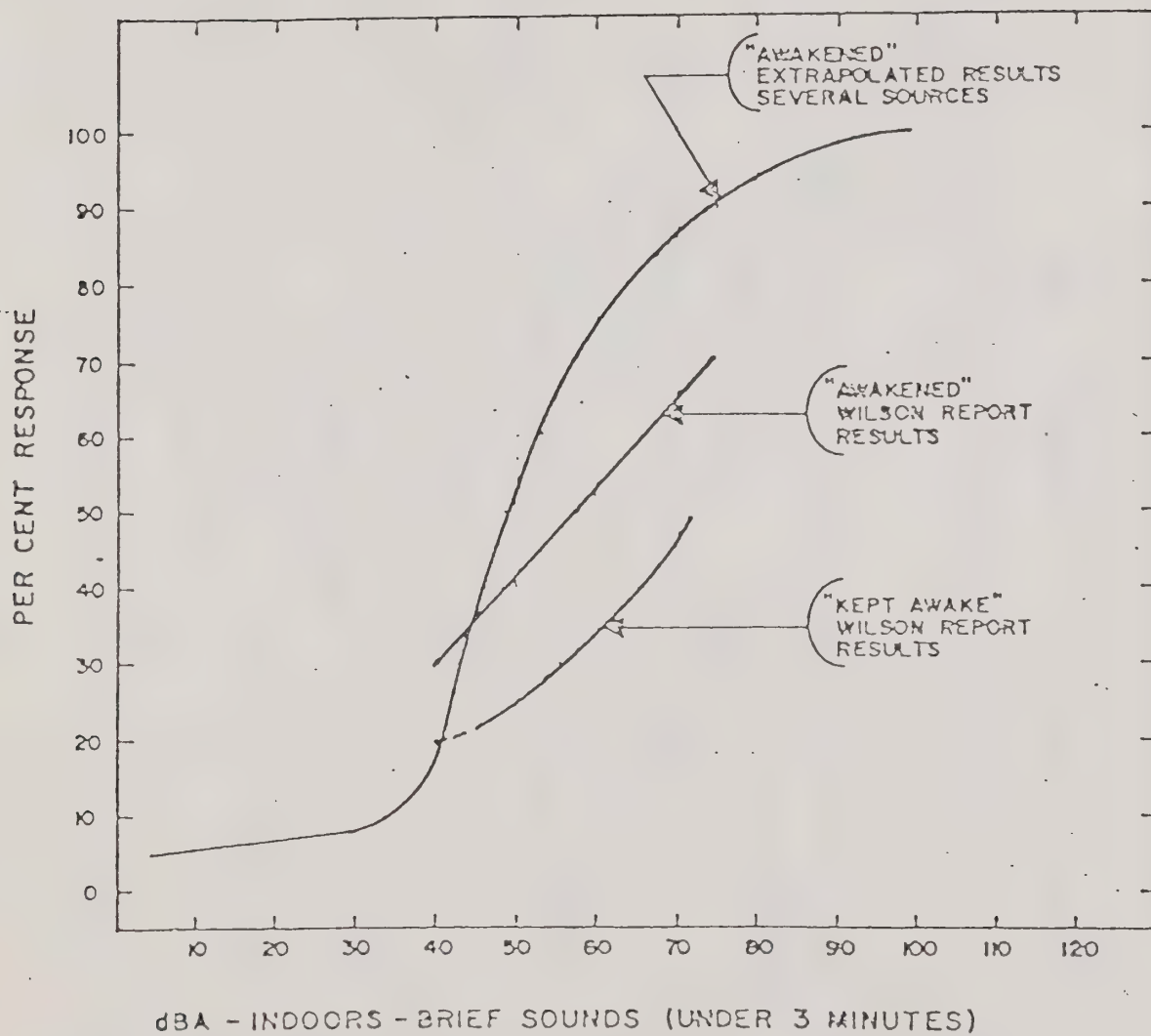


Distance at which ordinary speech can be understood outside. Indoors, levels may need to be lower because of the build-up of sound by reflections from walls of a room.

Source: Public Health & Welfare Criteria for Noise
U.S. Environmental Protection Agency, 1973

Figure 4.2.1 SPEECH INTERFERENCE

SLEEP INTERFERENCE

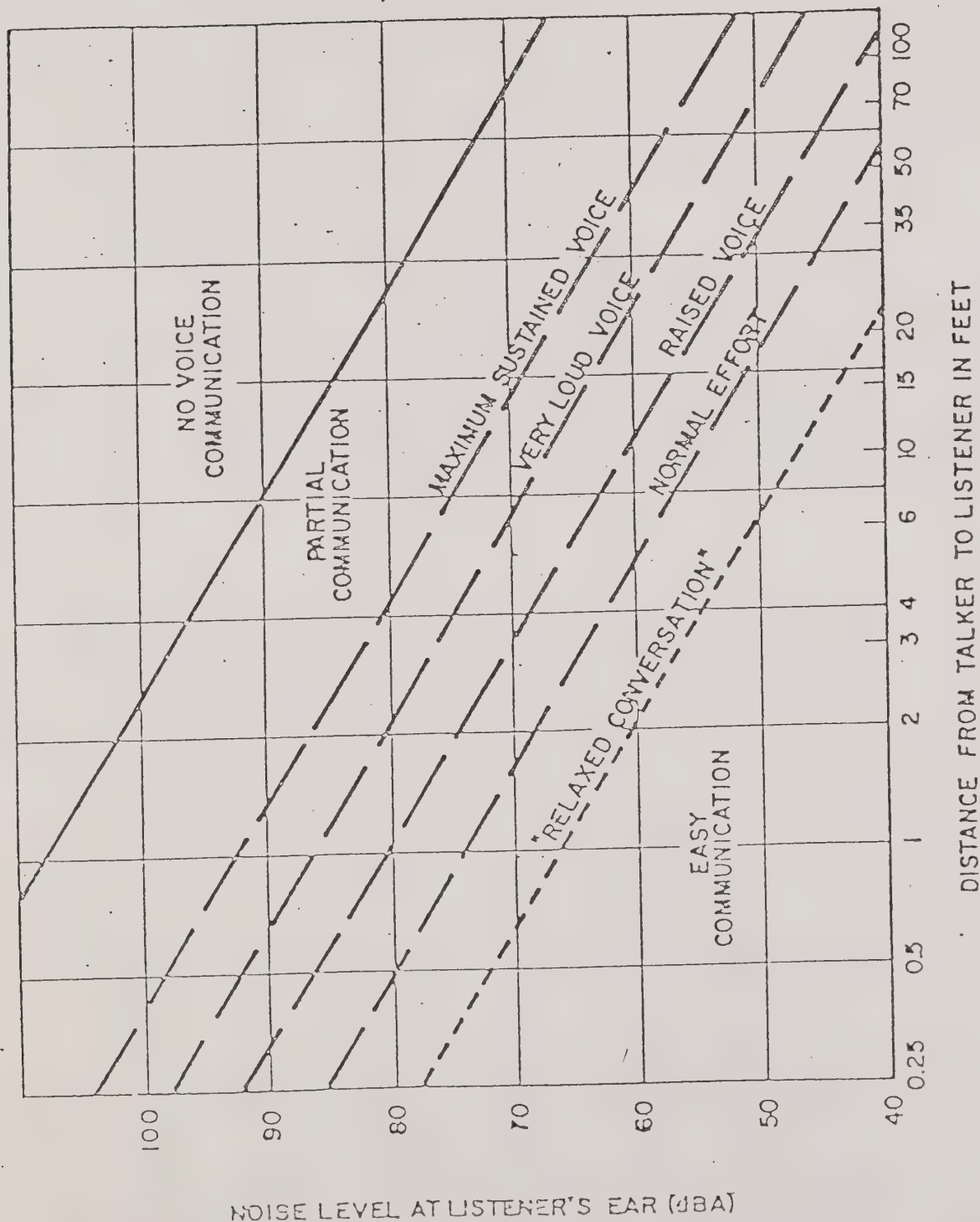


Source: Effects of Noise on People
U.S. Environmental Protection Agency, 1971

Figure 4.2.2 SLEEP INTERFERENCE

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SPEECH INTERFERENCE



Distance at which ordinary speech can be understood outside. Indoors, levels may need to be lower because of the build-up of sound by reflections from walls of a room.

Source: Public Health & Welfare Criteria for Noise
U.S. Environmental Protection Agency, 1973

Figure 4.2.1 SPEECH INTERFERENCE

TABLE 1.2

TYPICAL NOISE LEVELS FOR VARIOUS SOURCES IN dBA

Level of
Operator
Exposure (dBA)

Transportation & Recreational Vehicles	dBA Level	Home Appliances	Level of Operator Exposure (dBA)
Passenger cars (50')	64-76	Group I: Quiet Major Equipment and Appliances	
Sports Cars (50')	70-80	Refrigerator	40
Light trucks (50')	70-85	Freezer	41
Medium-heavy trucks (50')	75-95	Electric Heater	44
Motorcycles-street (50')	65-95	Humidifier	50
Off Road Motorcycles (50')	80-105	Floor Pan	51
Buses (50')	70-87	Dehumidifier	52
General aviation propeller aircraft (take-off @ 1000')	76-93	Window Fan	54
2-3 engine jet aircraft (take-off @ 1000')	90-100	Clothes Dryer	55
4 engine jet aircraft (take-off @ 1000')	100-105	Air Conditioner	55
Light helicopter (500')	65-78	Group II: Quiet Equipment and Small Appliances	
Medium - Heavy helicopters (500')	76-92	Hair Clipper	60
Diesel locomotive (50')	88-98	Clothes Washer	60
Freight cars (50')	80-94	Stove Hood Exhaust Fan	61
Train horn (50')	90-114	Electric Toothbrush	62
Industrial Machinery, Equipment (User Distance)		Water Closet	62
Pneumatic Power Tools (Grinders, Chippers)	90-116	Dishwasher	64
Molding machines	102-106	Electric Can Opener	64
Air blown devices (for paint, clean, etc.)	90-105	Food Mixer	65
Blowers (forced, fan, induced, etc.)	80-100	Hair Dryer	66
Air compressors	92-100	Faucet	66
Metal forming (Punch, Shearing)	82-97	Vacuum Cleaner	67
Combustion (Furnaces, flare stacks @ 25')	82-97	Electric Knife	68
Turbo generators (Steam @ 10')	88-92	Group III: Noisy Small Appliances	
Pumps (water, hydraulic)	80-92	Electric Knife Sharpener	70
Transformers	83-84	Sewing Machine	70
Industrial		Oral Lavage	72
Tractors (50')	75-95	Food Blender	73
Graders (50')	80-95	Electric Shaver	75
Pavers (50')	85-87	Electric Lawn Mower	75
Concrete Mixers (50')	75-88	Food Disposal (Grinder)	76
Movable Cranes (50')	75-85	Group IV: Noisy Electric Tools	
Generators (50')	72-82	Electric Edger and Trimmer	81
Jack Hammers & Rock drills (50')	80-98	Hedge Clippers	84
Impact Pile drivers (peaks) (50')	95-105	Home Shop Tools	85
Vibrator (50')	69-81		
Saws (50')	72-82		

Complaints are not, then, very good criteria to apply in setting protective noise standards. As a result, criteria based on the harmful and disturbing effects of noise on persons have emerged as more objective, measurable, and protective approaches to the problem of setting noise standards.

Suggested Interior Design Noise Levels

The following levels (Table 4.2.3) for design of rooms are not required standards but are design objectives to prevent speech or sleep interference and other adverse noise effects previously described.

4.2.2 Noise Contours and Population Impacted by Noise Contours

The noise contours for the City of Tracy were calculated by the Day-Night Average Level (Ldn) method in "Interim Noise Assessment Guidelines" published by the U.S. Department of Housing and Urban Development, 1980.

Basically, Ldns are average noise levels during a 24-hour day obtained after an addition of 10 dBA to sound levels occurring at night between 10 p.m. and 7 a.m. The daily levels of noise exposure are then averaged on an annual basis. Ldns are approximately equal to CNELs or "Community Noise Equivalent Levels" used in some state legislation.

Ldns for roads are calculated based on Annual Daily Traffic (ADT) volumes, percentage of day/night traffic, truck percentages, and traffic speed. Ldns for railroad operations are based on an annual average of numbers of trains per day and per night over a 24-hour period.

The noise contours are broken down into 5 dBA "steps" from 60-80 dBA for determination of land use compatibility. The State Office of Noise Control "Land Use Compatibility Chart for Community Noise Environments," describes noise contour levels within which various land uses are "acceptable"; "conditionally acceptable" if minor sound reduction measures are incorporated into the building or site design; "normally unacceptable" unless moderate to major sound reduction features are undertaken; and "clearly unacceptable," (Figure 4.2.3).

For residential uses, these categories generally correspond to the following Ldn levels:

Less than 60 dBA	=	Acceptable
60-69 dBA	=	Conditionally Acceptable
70-74 dBA	=	Normally Unacceptable
75 dBA or greater	=	Clearly Unacceptable

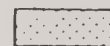
TABLE 4.2.3
SUGGESTED DESIGN SOUND
LEVELS FOR VARIOUS USES

<u>Type of Use</u>	<u>dBA Level</u>
Residential and hotels and motels:	
Interior living areas	25-40
Interior sleeping areas	20-35
Hospitals, convalescent homes, rest homes, housing for the elderly:	
Interior living areas	25-40
Interior sleeping areas	20-30
School classrooms, libraries	35-40
Concert halls, recital halls	21-30
Large auditoriums, large theaters, churches	not above 42
Large meeting and conference rooms	not above 42
Private or semi-private offices	38-47
Large offices, reception areas, retail shops and stores, cafeterias, etc.	42-52
Lobbies, laboratory work spaces, drafting and engineering rooms	47-56
Light maintenance shops, office and computer rooms, laundries	52-61
Shops, garages, power plant control rooms, etc.	56-66
Other commercial and industrial areas where speech interference is not a consideration	less than 70

Sources: Kryter, K. Effects of Noise on Man.
Environmental Protection Agency. Effects of Noise on People.
Environmental Protection Agency. Public Health and Welfare Criteria for Noise.
Beranek, L. L., Blazier, W. E., and Figwer, J. J, 1971. "Preferred Noise Criterion Curves and Their Application to Rooms": Journal of the Acoustical Society of America, v. 50, p. 1223-1228.

LAND USE CATEGORY	COMMUNITY NOISE EXPOSURE L _{dn} OR CNEL, dB					
	55	60	65	70	75	80
RESIDENTIAL – LOW DENSITY SINGLE FAMILY, DUPLEX, MOBILE HOMES						
RESIDENTIAL – MULTI. FAMILY						
TRANSIENT LODGING – MOTELS, HOTELS						
SCHOOLS, LIBRARIES, CHURCHES, HOSPITALS, NURSING HOMES						
AUDITORIUMS, CONCERT HALLS, AMPHITHEATRES						
SPORTS ARENA, OUTDOOR SPECTATOR SPORTS						
PLAYGROUNDS, NEIGHBORHOOD PARKS						
GOLF COURSES, RIDING STABLES, WATER RECREATION, CEMETERIES						
OFFICE BUILDINGS, BUSINESS COMMERCIAL AND PROFESSIONAL						
INDUSTRIAL, MANUFACTURING UTILITIES, AGRICULTURE						

INTERPRETATION



NORMALLY ACCEPTABLE

Specified land use is satisfactory, based upon the assumption that any buildings involved are of normal conventional construction, without any special noise insulation requirements.



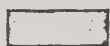
CONDITIONALLY ACCEPTABLE

New construction or development should be undertaken only after a detailed analysis of the noise reduction requirements is made and needed noise insulation features included in the design. Conventional construction, but with closed windows and fresh air supply systems or air conditioning will normally suffice.



NORMALLY UNACCEPTABLE

New construction or development should generally be discouraged. If new construction or development does proceed, a detailed analysis of the noise reduction requirements must be made and needed noise insulation features included in the design.



CLEARLY UNACCEPTABLE

New construction or development should generally not be undertaken.

CONSIDERATIONS IN DETERMINATION OF NOISE-COMPATIBLE LAND USE

A. NORMALIZED NOISE EXPOSURE INFORMATION DESIRED

Where sufficient data exists, evaluate land use suitability with respect to a "normalized" value of CNEL or L_{dn}. Normalized values are obtained by adding or subtracting the constants described in Table 1 to the measured or calculated value of CNEL or L_{dn}.

B. NOISE SOURCE CHARACTERISTICS

The land use-noise compatibility recommendations should be viewed in relation to the specific source of the noise. For example, aircraft and railroad noise is normally made up of higher single noise events than auto traffic but occurs less frequently. Therefore, different sources yielding the same composite noise exposure do not necessarily create the same noise environment. The State Aeronautics Act uses 65 dB CNEL as the criterion which airports must eventually meet to protect existing residential communities from unacceptable exposure to aircraft noise. In order to facilitate the purposes of the Act, one of which is to encourage land uses compatible with the 65 dB CNEL criterion wherever possible, and in order to facilitate the ability of airports to comply with the Act, residential uses located in Com-

munity Noise Exposure Areas greater than 65 dB should be discouraged and considered located within normally unacceptable areas.

C. SUITABLE INTERIOR ENVIRONMENTS

One objective of locating residential units relative to a known noise source is to maintain a suitable interior noise environment at no greater than 45 dB CNEL of L_{dn}. This requirement, coupled with the measured or calculated noise reduction performance of the type of structure under consideration, should govern the minimum acceptable distance to a noise source.

D. ACCEPTABLE OUTDOOR ENVIRONMENTS

Another consideration, which in some communities is an overriding factor, is the desire for an acceptable outdoor noise environment. When this is the case, more restrictive standards for land use compatibility, typically below the maximum considered "normally acceptable" for that land use category, may be appropriate.

Figure 4.2.3 LAND USE COMPATIBILITY FOR COMMUNITY NOISE ENVIRONMENTS

Source: San Joaquin County Planning Department

These categories correspond to State Building Noise Insulation Standards. The only exception to these standards is around airports, where a more restrictive standard is appropriate because of the difficulty in insulating buildings, because outside yard areas cannot be shielded, and because airport noise is characterized by extremely high noise levels followed by periods of quiet (and thus tends to be more bothersome than steady noise). Airport Noise Standards (California Administrative Code, Title 21, Sections 5000 et seq.) prohibit new homes within Ldn contours of 65 dBA or greater around airports.

Table 4.2.4 identifies all roads and railroads with existing noise contours, and Table 4.2.5 identifies noise controls projected for 1995. For roads that are expected to have changes in noise contours by 1995, specific future contours should be calculated and be used as the basis for building insulation requirements. Care must be taken to combine the contours with those of adjacent or intersecting roads and railroads. This can be done as part of a project's EIR or acoustical report. The tables of noise contours which accompany the Noise Element do not show shielding effects, as this would be virtually impossible to do.

Tables 4.2.6 and 4.2.7 summarize the estimated population residing within various noise contours of different sources for 1981 and 1995.

4.2.3 Noise-Compatible Land Use Planning

The State Land Use Compatibility Chart (Figure 4.2.3) and the State Noise Insulation Standards (California Administrative Code, Title 25, Section 28) and State Noise Standards (California Administrative Code, Title 21, Sections 5000 et seq.) recommend prohibiting new residential construction in certain areas; shielding or insulating residences in other areas; and mitigation of noise impacts through site design, construction precautions, and other measures.

General Placement of Land Uses Through Planning and Zoning

Traditional land use planning and zoning goals have long attempted to segregate residential uses from industrial and commercial land uses. For noise control purposes, this is generally good, although it means more and longer commuting, higher energy consumption, more vehicles on city streets and freeways and thus poorer air quality. Such separation does, however, mean truck routes are primarily located in industrial areas rather than purely residential streets. Garbage collection or deliveries at odd hours will not disturb residents. Noise from the industry or commercial establishment itself will not affect residents. Of course, there will be areas where the uses must meet. In such transition areas, performance standards are now often used to protect residents and to protect business and industry from future complaints. These standards set decibel and time limits on noise emissions from new industrial or commercial uses. At the maximum, performance standards should conform to reasonable noise ordinance limits so that problem situations are not created.

TABLE 4.2.4
TRACY NOISE ENVIRONMENT, 1981

Road	Road Segment	Distance from the Edge of the Roadway (in Feet)			
		75 Ldn	70 Ldn	65 Ldn	60 Ldn
I-205	Corral Hollow to Tracy Blvd.	50	110	230	490
	East of Tracy Blvd.	52	120	260	510
Grant Line Road	Corral Hollow to Lincoln Blvd.	—	15	34	65
	Lincoln to Tracy Blvd.	14	31	68	140
	Tracy Blvd. to Parker	16.5	35	78	160
	Parker to Holly	16.5	35	78	160
	Holly to East Street	16	34	74	155
	East Street to MacArthur	13	27	60	125
	East of MacArthur	12.5	26	55	120
MacArthur Drive	I-205 to Grant Line	17	37	83	170
	South of Eleventh	15	32	70	150
Tracy Blvd.	North of I-205	—	17	38	70
	I-205 to Grant Line	12.5	26	55	120
	Grant Line to Lowell	16	34	74	155
	Lowell to Eleventh	16	34	74	155
	Eleventh to Fourth	—	15	34	65
Eleventh Street	Corral Hollow to Lincoln	11	24	50	103
	Lincoln to Tracy Blvd.	20	44	95	200
	Tracy Blvd. to Holly	28	60	135	270
	Holly to MacArthur	28	60	135	270
	East of MacArthur	25	53	115	240
Parker Street	Grant Line to Eleventh	—	11	24	50
Holly Street	I-205 to Grant Line	—	19	42	88
	Grant Line to Lowell	—	19	42	88
	Lowell to Eleventh	—	19	42	88
Central Avenue	Eleventh to Third	11	24	50	103
Southern Pacific Railroad	Tracy to Martinez	—	—	45	110
	Tracy to Lathrop	18	60	130	290
	Tracy to Altamont	—	—	45	110
	Tracy to Patterson	—	—	45	110
Western Pacific Railroad		21	70	180	400

TABLE 4.2.5
TRACY NOISE ENVIRONMENT, 1995

<u>Road</u>	<u>Road Segment</u>	Distance from the Edge of the Roadway (in Feet)			
		<u>75</u> <u>Ldn</u>	<u>70</u> <u>Ldn</u>	<u>65</u> <u>Ldn</u>	<u>60</u> <u>Ldn</u>
I-205	Corral Hollow to Tracy Blvd.	65	180	305	650
	East of Tracy Blvd.	56	120	265	550
Grant Line Road	Corral Hollow to Lincoln Blvd.	12.5	26	55	120
	Lincoln to Tracy Blvd.	17	37	84	170
	Tracy Blvd. to Parker	19	41	90	185
	Parker to Holly	19	41	90	185
	Holly to East Street	17	37	83	170
	East Street to MacArthur	13	27	60	125
	East of MacArthur	17.5	38	86	175
MacArthur Drive	I-205 to Grant Line	31	67	145	305
	Grant Line to Eleventh (proposed)	36	78	170	360
	South of Eleventh	23	49	111	225
Tracy Blvd.	North of I-205	18	38	85	180
	I-205 to Grant Line	15	32	70	150
	Grant Line to Lowell	18	38	85	180
	Lowell to Eaton	17	37	83	170
	Eaton to Eleventh	17.5	38	86	175
	Eleventh to Fourth	16.5	35	78	160
	Fourth to Valpico	20	44	95	200
	Valpico to Linne	28	60	135	270
	South of Linne	16	34	74	155
Eleventh Street	Corral Hollow to Lincoln	15	32	70	150
	Lincoln to Tracy Blvd.	19.5	42	92	192
	Tracy Blvd. to Holly	25	53	115	240
	Holly to East Street	22	48	110	220
	East Street to MacArthur	24	50	112	230
	East of MacArthur	38	84	180	380
Parker Avenue	Grant Line to Eaton	—	11	24	50
	Eaton to Eleventh	—	13	29	61
Holly Street	I-205 to Grant Line	—	19	42	88
	Grant Line to Lowell	—	17	38	70
	Lowell to Eaton	—	17	38	70
	Eaton to Eleventh	9	21	46	96
Central Avenue	Eleventh to Third	14	31	68	140
	South of Third (proposed)	14	31	68	140

TABLE 4.2.5
TRACY NOISE ENVIRONMENT, 1995
(Continued)

<u>Road</u>	<u>Road Segment</u>	Distance from the Edge of the Roadway (in Feet)			
		<u>75</u> <u>Ldn</u>	<u>70</u> <u>Ldn</u>	<u>65</u> <u>Ldn</u>	<u>60</u> <u>Ldn</u>
Southern Pacific Railroad	Tracy to Martinez	—	—	45	110
	Tracy to Lathrop	18	60	130	290
	Tracy to Altamont	—	—	45	110
	Tracy to Patterson	—	—	45	110
Western Pacific Railroad		21	70	180	400
Corral Hollow Road	North of I-205	11	24	50	103
	I-205 to Grant Line	—	17	38	70
	Grant Line to Eleventh	40	85	180	390
	South of Eleventh	42	90	200	410
Chrisman Road	Eleventh to Schulte	28	60	135	270
	Schulte to Valpico	28	60	135	270
	Valpico to Linne	28	60	135	270
Schulte Road	Tracy Blvd. to Chrisman	16	34	74	155
Linne Road	Tracy Blvd. to Chrisman	27	56	125	252
East Street	Grant Line to Lowell	12.5	26	55	120
	Lowell to Eleventh	15	32	70	150

TABLE 4.2.6
PERSONS AFFECTED BY NOISE IN TRACY, 1981

Road	Road Segment	Number of Persons Impacted ^a				Total
		75 Ldn	70 Ldn	65 Ldn	60 Ldn	
I-205	Corral Hollow to Tracy Blvd.	—	—	91	80	171
	East of Tracy Blvd.	—	66	58	262	386
Grant Line Road	Corral Hollow to Lincoln Blvd.	—	—	—	55	55
	Lincoln to Tracy Blvd.	—	—	39	50	89
	Tracy Blvd. to Parker	—	3	14	3	20
	Parker to Holly	—	8	—	—	8
	Holly to East Street	—	—	28	17	45
	East Street to MacArthur	—	25	3	6	34
	East of MacArthur	—	—	17	—	17
MacArthur Drive	I-205 to Grant Line	—	—	50	17	67
	South of Eleventh	—	—	28	—	28
Tracy Blvd.	North of I-205	—	—	—	22	22
	I-205 to Grant Line	—	—	39	22	61
	Grant Line to Lowell	—	25	3	14	42
	Lowell to Eleventh	—	39	41	11	91
	Eleventh to Fourth	—	—	39	6	45
Eleventh Street	Corral Hollow to Lincoln	—	—	—	—	—
	Lincoln to Tracy Blvd.	—	—	—	11	11
	Tracy Blvd. to Holly	30	—	41	44	115
	Holly to MacArthur	8	—	17	39	64
	East of MacArthur	11	—	—	—	11
Parker Avenue	Grant Line to Eleventh	—	—	77	179	256
Holly Street	I-205 to Grant Line	—	—	11	182	193
	Grant Line to Lowell	—	—	22	72	94
	Lowell to Eleventh	—	—	20	85	105
Central Avenue	Eleventh to Third	—	—	36	—	36
Southern Pacific Railroad	Tracy to Martinez	—	—	8	17	25
	Tracy to Lathrop	—	—	110	149	259
	Tracy to Altamont	—	—	6	30	36
	Tracy to Patterson	—	—	—	17	17
Western Pacific Railroad		—	—	28	44	72
Total Number of Persons Impacted		49	166	826	1,434	2,475
Percent of Total Population Impacted						13.43

^aEstimated at 2.76 persons per impacted unit, rounded to the nearest whole number.
Number of units was counted from B-D land use map.

TABLE 4.2.7
PERSONS AFFECTED BY NOISE IN TRACY, 1995

Road	Road Segment	Number of Persons Impacted ^a				Total
		75 Ldn	70 Ldn	65 Ldn	60 Ldn	
I-205	Corral Hollow to Tracy Blvd.	--	91	55	110	256
	East of Tracy Blvd.	--	66	86	287	439
Grant Line Road	Corral Hollow to Lincoln Blvd.	--	--	77	--	77
	Lincoln to Tracy Blvd.	--	--	94	77	171
	Tracy Blvd. to Parker	--	3	14	3	20
	Parker to Holly	--	8	--	--	8
	Holly to East Street	--	--	28	17	45
	East Street to MacArthur	--	25	3	6	34
	East of MacArthur	--	--	17	--	17
MacArthur Drive	I-205 to Grant Line Road	--	86	--	83	169
	Grant Line to Eleventh (proposed)	--	--	--	--	--
	South of Eleventh	--	--	215	39	254
Tracy Blvd.	North of I-205	--	--	--	22	22
	I-205 to Grant Line	--	--	61	50	111
	Grant Line to Lowell	--	25	3	14	42
	Lowell to Eaton	--	33	11	8	52
	Eaton to Eleventh	--	6	30	3	39
	Eleventh to Fourth	--	--	66	33	99
	Fourth to Valpico	--	22	30	58	110
	Valpico to Linne	--	--	--	--	--
	South of Linne	--	--	--	--	--
Eleventh Street	Corral Hollow to Lincoln	--	--	8	--	8
	Lincoln to Tracy Blvd.	--	--	--	11	11
	Tracy Blvd. to Holly	30	--	41	44	115
	Holly to East Street	--	--	17	39	56
	East Street to MacArthur	8	--	--	--	8
	East of MacArthur	11	--	--	--	11
Parker Avenue	Grant Line to Eaton	--	--	66	138	204
	Eaton to Eleventh	--	--	11	41	52
Holly Street	I-205 to Grant Line	--	--	11	182	193
	Grant Line to Lowell	--	--	26	72	98
	Lowell to Eaton	--	--	14	63	77
	Eaton to Eleventh	--	--	6	22	28
Central Avenue	Eleventh to Third	--	--	36	--	36
	South of Third (proposed)	--	--	83	41	124

TABLE 4.2.7
PERSONS AFFECTED BY NOISE IN TRACY, 1995
(Continued)

<u>Road</u>	<u>Road Segment</u>	Number of Persons Impacted ^a				<u>Total</u>
		<u>75 Ldn</u>	<u>70 Ldn</u>	<u>65 Ldn</u>	<u>60 Ldn</u>	
Southern Pacific Railroad	Tracy to Martinez					
	Tracy to Lathrop					
	Tracy to Altamont	—	—	6	30	36
	Tracy to Patterson	—	—	—	17	17
Western Pacific Railroad		—	—	83	50	133
Corral Hollow Road	North of I-205	—	—	41	—	41
	I-205 to Grant Line	—	—	—	—	—
	Grant Line to Eleventh	—	55	—	174	229
	South of Eleventh	—	—	28	—	28
Chrisman Road	Eleventh to Schulte	—	—	22	—	22
	Schulte to Valpico	—	—	—	—	—
	Valpico to Linne	—	—	75	—	75
Schulte Road	Tracy Blvd. to Chrisman	—	—	163	91	254
Linne Road	Tracy Blvd. to Chrisman	—	—	50	33	83
East Street	Grant Line to Lowell	—	—	118	—	118
	Lowell to Eleventh	—	—	75	—	75
Total Number of Persons Impacted		49	420	1,888	2,098	4,455
Percent of Total Population Impacted						12.22

^aEstimated at 2.70 persons per impacted unit, rounded to the nearest whole number. Number of units impacted is estimated at 4,500 sq. ft./unit for medium density residential areas, 10,000 sq. ft./unit for low to medium residential areas, and at 65,000 sq. ft./unit for rural residential areas. This also assumes full build-out of residential areas along these roadways.

Most general plans locate higher density residential zones along noisy transportation corridors to protect single-family residents who demand quieter environments. At first, it would appear that this practice exposes more people to high noise environments. Yet it makes sense in some ways from a noise standpoint. Multi-family buildings can be more economically sound insulated than single-family homes. In apartments, the relatively small common outside yard and pool areas can be shielded from roadways by the large building complex. This benefit does not apply to duplex development with small individual yards.

Location of Land Uses Near High Noise Sources. Figure 4.2.3 corresponds with existing State Building Noise Insulation Standards, except Airport Noise Standards, which are a special case. The figure describes Ldn noise contours greater than 75 dBA as "Clearly Unacceptable" for new residential construction.

Around airports, new homes are prohibited within Ldb contours greater than 65 dBA because of the difficulty in insulation or shielding against airport noise. Tracy Airport generates limited 65 dBA contours; however, residential development is not located within future 65 dBA Ldn contours (see Figure 4.2.4).

Effective shielding by barriers to reduce exterior noise levels next to heavily used railroad tracks is generally not possible because railroad tracks tend to be elevated and engines are 16 feet high. Additionally, trains generate noise levels twice as high as trucks. Even with shielding, peak noise levels at near distances would cause severe disturbance. Such a restriction does not affect much residential land. The 75 dBA Ldn contours fall about 18 feet either side of Southern Pacific Railroad's tracks. They also affect a 21-foot strip on either side of Western Pacific Railroad. In most instances, this strip is within the railroad right-of-way.

These 75 dBA Ldn contour strips include no undeveloped land shown for residential development, but the 60 Ldn contour for the Southern Pacific Lathrop line does include the downtown residential neighborhood within 290 feet of the track. All residential land adjacent to railroads is separated by greenway buffers from the rail line on the land use plan.

Local governments are preempted from regulating railroad operations to reduce noise by placing limits on speed and noise levels or curfews on operations. The State and Federal Public Utilities Commissions contend that they have final authority over all phases of railroad operations. Thus, planning compatible land uses around rail lines and setting noise attenuation standards for adjoining development are essential actions.

Building and Site Design

Within Ldn contour levels of 60 dBA and greater, State Building Noise Insulation Standards apply to new multi-family residential construction. Policy 28-3 applies these minimum standards to detached single-family development hospitals, convalescent homes, and rest homes. The standards relate to the noise contour levels as follows.

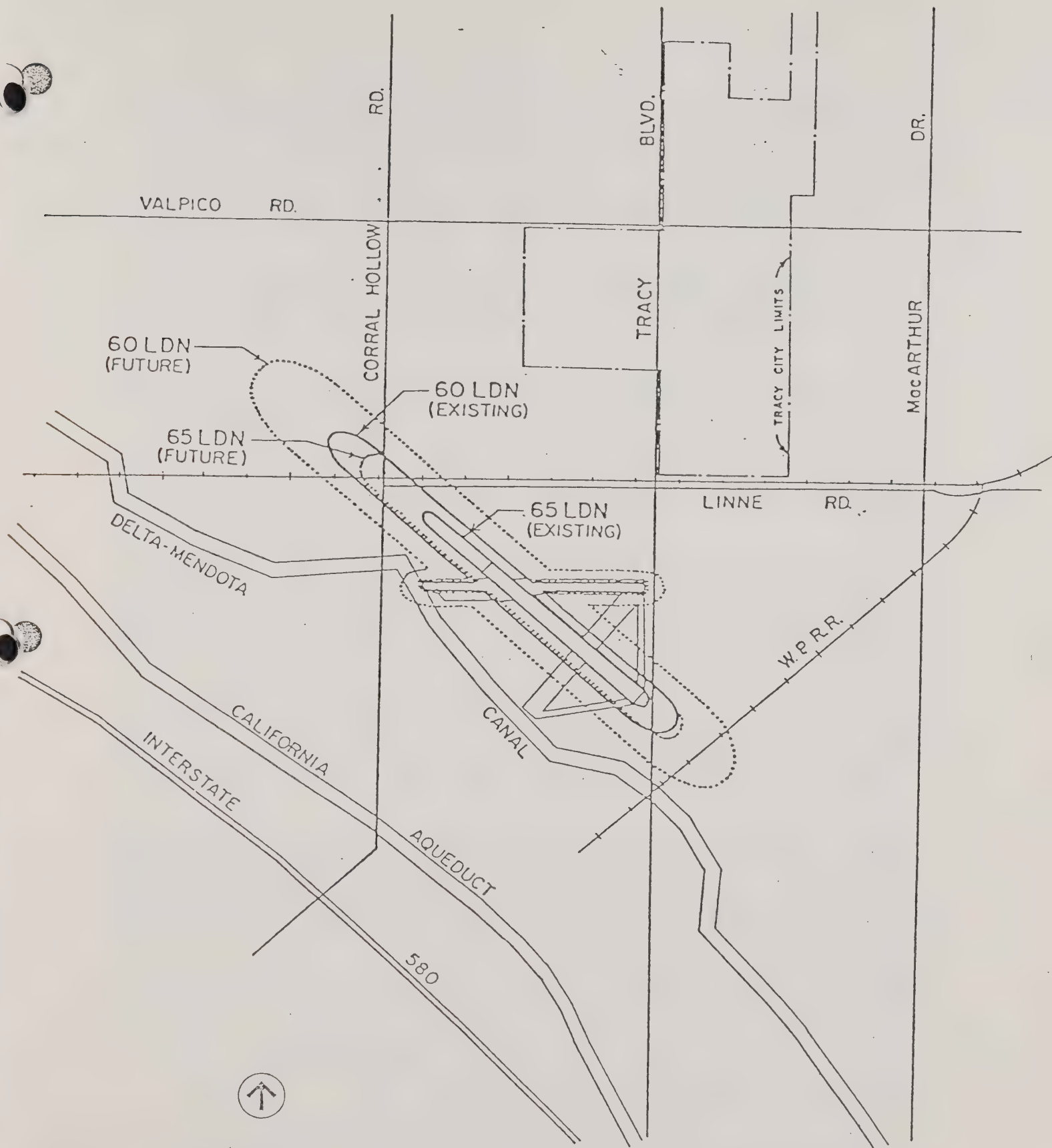


Figure 4.2.4
TRACY AIRPORT CONTOURS: 1973
AND 1993 LDN NOISE CONTOURS

Source: San Joaquin County Planning Department

Conventional residential construction with forced air ventilation usually is adequate where Ldns are 60-69 dBA. However, careful attention to construction details is necessary to ensure that a house achieves its full insulation potential. Ill-fitting doors and windows can negate the sound insulation effects of an otherwise well-built home. Locating bedrooms away from the noise source is important in reducing potential problems. Further, policy-makers should consider the importance of exterior noise shielding to projects within Ldn contours of 65-75 dBA.

Where exterior sound levels exceed an Ldn of 70 dBA, additional building sound insulation or shielding is necessary in order to reduce sounds to acceptable interior levels according to Noise Insulation Standards (California Administrative Code, Title 25, Subchapter 1, Article 4, Section 1092).

Shielding, when it does not give the appearance of a walled city, is often an answer. Many surface noise sources can be shielded from residential areas by barrier walls or berms, reducing Ldn noise levels about 10 dBA. This would reduce a 70 dBA Ldn contour area to an Ldn of 60 dBA, making it acceptable for residential construction. Barriers are a good mitigating measure to employ where possible, for they reduce building insulation costs and make outside areas usable. However, this alternative is not always possible.

To be effective, barriers must be solid and contain no cracks or holes for sound to leak through. Airborne sound travels readily through any opening. For example, wood-slatted, chain-link fences are virtually useless as a sound barrier. Barriers may be constructed of concrete blocks and slabs, one-half-inch-thick plywood panels, or earth. All will provide about equal amounts of reduction since the leakage over the top and sides of the barrier will determine the net result.

To be effective, barriers must also be high and long enough to block the noise sources from sight. What can be seen, can be heard. Thus, at-grade or depressed roadways usually can be shielded, but elevated roadways are difficult to shield unless the barrier is on the road level. This would be the only effective way to reduce I-205 freeway noise.

An Office of Noise Control publication entitled "Evaluation of Outdoor to Indoor Noise Reduction of Building Facades and Outdoor Noise Barriers" provides a method for evaluating a proposed barrier's effectiveness. Another more thorough method is presented in a U.S. Department of Transportation, Federal Highway Administration publication, "Highway Noise: Noise Barrier Design Handbook." (FHWA-RD-76-58).

To estimate shielding sound reductions from buildings, barrier walls, and the minimal shielding effects of plantings for specific projects, the following general rules apply:

1. To estimate shielding from buildings:

- Subtract 3 decibels per row of buildings where buildings occupy 50 percent of the area;
- Subtract 5 decibels per row of buildings where buildings occupy 60-70 percent of row area;

- Subtract 7 decibels per row of buildings where buildings occupy 80 percent of row area;
- Subtract 10 decibels where buildings occupy 90 percent of row area; and
- Subtract 10-15 decibels where a solid row of continuous buildings completely blocks vehicles from sight.

Sound penetration studies indicate shielding is effective for the first two to three rows of buildings and remains constant thereafter. Reductions (except for continuous buildings) should not exceed a maximum of 10 decibels. The average height of the first row of buildings must equal or exceed the average height of the second row for a sound reduction to be realized. Where roadways are elevated, shielding by buildings is very difficult. No direct line of sight to the roadway should exist. Where only scattered buildings exist, each building might produce a small localized shielding effect, but the combined effect is negligible.

2. To estimate shielding from barrier walls:

- Subtract 10 decibels where a wall barrier, or earth berm, completely blocks vehicles from sight. Larger reductions up to 15 decibels are very difficult to achieve and are about the maximum attainable.

3. To estimate shielding from plantings:

- Subtract up to 1 decibel for every 4 feet of depth of very dense plantings that block vehicles from view; and
- Subtract 5 decibels per 100 feet of depth of mature trees that block sight of vehicles. This should not exceed 10 decibels at a maximum.

As can be seen, planting has relatively little effect on noise levels, although it may provide a psychological feeling of isolation.

Sound insulation of buildings is the other primary method used to reduce interior noise levels. The Office of Noise Control publication previously cited also describes more effective window/wall combinations to use in high noise areas. It describes measures such as reducing window size and using double windows or staggered stud walls to increase sound insulation. Solid plywood roof construction may also be needed. The following paragraphs suggest other building and site design and construction techniques to reduce interior noise levels.

The simplest sound reduction measure is to put as much distance as possible between residential buildings and the noise source. In apartment projects, parking areas can be located toward the road. In subdivisions, frontage roads add distance. Distance is not as effective a method as barrier walls, but a 3-4.5 dBA reduction will generally occur per doubling of distance from the noise source.

Another useful measure is to design each dwelling unit so that bedrooms and quiet living areas face away from the noise source, while kitchens, garages, bathrooms, and playrooms face the source. In this way, some shielding and additional distance is obtained from the building itself.

In a subdivision or apartment complex, units can often be laid out to reduce noise impacts by minimizing the number nearest the noise source, or by using some units (or commercial or community buildings) to shield other residential units behind them.

That construction details are extremely important in achieving and maintaining a building's full noise reduction potential has already been mentioned. Most residential buildings will reduce outside sound levels only 15-20 decibels. This is because sound will leak through poorly placed attic or dryer vents or through improperly sealed windows and doors. Table 4.2.8, published by Owens-Corning Fiberglass Corporation, pertains primarily to multi-family construction, but many recommendations apply to single-family construction as well.

Noise Considerations for Specific Land Uses

Hospitals, Convalescent Hospitals, Rest Homes. The sick and the elderly are particularly susceptible to noise disturbance. The elderly are much more easily awakened by noise than younger groups, and once awakened, find it more difficult to return to sleep. Due to a loss of hearing acuity, the aged also need lower background noise levels to understand speech. For these reasons, convalescent hospitals, hospitals, and rest homes need protection from noise sources even more than residences in general.

Surprisingly, however, there are no specific existing noise standards (for protection from external noise sources) governing any of these uses. Rest homes, licensed through the Department of Public Assistance and the state, are subject to all applicable state and local building codes and regulations at the time they are licensed (California Administrative Code, Title 22, Article 6, Section 80801). Policy 28-3 makes these uses subject to the same standards as multi-family dwellings.

Schools. Noise affects schools primarily in terms of speech and learning interference. Speech interference becomes severe above 55-60 dBA and acousticians recommend average levels in the range of 35-40 dBA to insure good communication. Air-conditioned rooms will alleviate many existing problems by enabling teachers to keep windows closed. Proper location and design of new classrooms can eliminate future noise problems. Again, however, there are no state standards governing new construction of classrooms. New school construction must meet local building regulations; thus, local interior standards could be developed and adopted in lieu of state action. Such standards might combine the interior design levels of Table 4.2.3 with an interior peak level maximum of 60 dBA. Also, Figure 4.2.3 (State Office of Noise Control Land Use Compatibility) applies as a general location and design guideline.

Recreation Areas. Design of recreation areas involving noisy activities should protect surrounding sensitive land uses from disturbance where there are noisy sections of a multi-use park, they should be buffered from more sensitive park uses as well as land uses outside the park.

Commercial and Industrial Uses. Commercial and industrial land uses are common noise generators. Noise-related land use compatibility problems may occur where these uses are adjacent to noise-sensitive uses. Since each case is likely to be different, determination of noise attenuation measures needed must be based on the performance of similar uses and equipment at other locations. Where similar cases

TABLE 4.2.8
NOISE CONTROL PRECAUTIONS FOR BUILDERS

Maintaining Full Reduction Potential of Walls and Floor-Ceilings:

- Avoid unnecessary perforation of walls or ceilings. Optimum sound isolation requires that holes not be cut for vents or grilles or for recessing cabinets, light fixtures, etc. Where holes are necessary, avoid placing them back to back and immediately next to each other. Electrical boxes should be staggered at least one stud space.
- Seal all openings in walls and floor-ceilings. A non-hardening, resilient caulking material should be used to seal all cutouts, such as around electrical, telephone and piping outlets. Caulk at all intersections with the adjoining structure, such as where the wall assembly meets the floor-ceiling. Cracks are excellent conductors of airborne sound.
- Seal all cracks in subfloors with an airtight caulk or install a layer of underlayment over the entire surface.
- Close all open spaces between joists over party walls with flocking to prevent sound travelling over walls. Under party walls, close the open space between the joists under floors and install gypsum board or plywood at least 4 feet wide to the bottom of joists.
- Cover all party wall and ceiling surfaces behind ducts and piping, behind bathtubs, behind soffits, and under stairs with gypsum board.
- Use resilient floor coverings such as carpeting to isolate structure-borne vibrations and sound.

Ducts and Conduits:

- Do not pierce common floors or walls with duct systems.
- Avoid construction such as ducts, rigid conduits or corridors which act as speaking tubes to transmit sound from one area to another.
- Line ducts with insulation to absorb noise and seal conduits.
- Ducts, pipes, and conduits should be broken with resilient non-rigid boots or flexible couplings where they leave vibrating equipment.

Doors:

- Stagger doors across hallways.
- Avoid sliding doors where control of noise is desired.
- Use solid wood core doors or mineral core doors where privacy is demanded. Hollow core doors will lower sound insulation and should never be used when a high performance is desired.
- Seal doors at top and sides with soft type weather stripping and use automatic threshold.

Windows:

- Minimize window sizes facing noisy areas. Solid insulated walls would tend to provide better sound reduction.
- Arrange casement windows so sound is not reflected into adjoining units.
- Movable windows should close tightly and be weatherstripped.
- Thick glass, insulating glass, double glazing and double windows with air space between all help reduce noise transmission through windows.

Equipment Noise:

- Locate heating and cooling equipment far from bedrooms.
- Inquire about equipment noise levels before buying and insist on quiet units.
- Isolate equipment in room with door to outside or use a solid core door, gasketed, when access is from building interior.
- Mount equipment on fiberglass board or other resilient mountings to isolate vibrations from structure.

Plumbing:

- Design pipe runs with swing arm so expansion and contraction can occur without binding and thus eliminate noise.
- Isolate piping from structure with resilient gasketing and caulking where they pass through walls, floors, or other building surfaces.
- Develop a well-planned layout to minimize the noise of water flowing. Over-sized pipes and reduced pressure will slow the speed of flowing water and reduce noise.
- Provide air chambers at each outlet to eliminate water hammer due to abrupt stop of flowing water.
- Use quiet action water closets and isolate from structure on a floating floor.

Electrical:

- Wire each apartment as a unit--avoid penetration of walls or floors between apartments.
- Caulk holes made by wiring which penetrates connecting structures with plastic caulk or dry packing.
- Connect vibrating equipment with flexible wiring.

Source: "Quiet Comfort" and "Solutions to Noise Control Problems", Owens-Corning Fiberglas Corporation, Toledo, Ohio 43601

do not exist development approval should carry an obligation to meet predetermined standards. Table 4.2.9 describes noise considerations for new commercial and industrial development.

4.2.4 Non-Land Use Mitigation Measures for Noise Control

There are many non-land use oriented measures for community noise control. The following covers methods to reduce some major perceived noise problems in Tracy.

Police Enforcement of Vehicle Noise Laws

Excessively noisy motorcycles and cars can be strictly dealt with under existing laws. State legislation (California Vehicle Code) already prohibits faulty or modified mufflers on vehicles. This can be visually checked by a police officer. Other state laws set decibel limits for all vehicles. Trained officers take vehicle passby noise readings to determine if the vehicle exceeds limits established. Since noise limits are generous for standard vehicles, it can be concluded that vehicles exceeding them have faulty mufflers, no muffler, or are being driven in an excessively noisy manner.

The main reason police give for not enforcing these sections of the Vehicle Code are more pressing demands on available time, but some cities do achieve results by giving noise enforcement priority.

Vehicle noise enforcement may have the added benefit of reducing overall urban noise levels, as well as peak level annoyance. San Francisco found dBA reductions in nearly all parts of the city in two years when comparing noise contour maps prepared in 1974 with those prepared in 1976 after start-up of a noise enforcement program.

Community Noise Ordinances

Barking dogs can best be dealt with by ordinance—either as part of a comprehensive noise ordinance or as a separate ordinance. Most ordinances declare it unlawful to keep any animal that disturbs any person by continuous or incessant barking. "Incessant barking" can be defined as that occurring for 10 minutes or more in duration.

Enforcement of barking dog ordinances is usually handled carefully—the complaint is investigated to see if there is a true problem, and contact with the dog owner is made. Records are then filed with the District Attorney or City Attorney, who will write a warning letter, etc. before any drastic action such as fines or removing the dog is taken. The ordinances merely provide avenues for legal resolution of such problems.

"Neighbors" are another widespread urban area noise problem. Such complaints primarily involve amplified music, loud children, or home tool and garden equipment use. Noise ordinances are the most effective measure local governments can employ to alleviate "neighbor" complaints. They establish time and/or decibel limits on noisy activities, making complaints relatively easy to define quantitatively.

TABLE 4.2.9
NOISE CONSIDERATIONS FOR COMMERCIAL/INDUSTRIAL DEVELOPMENT

Land separation of residential from industrial or noisy commercial areas will avoid creation of potential noise-related land use conflicts. However, in those areas where residential zones are adjacent to industrial or commercial areas, performance standards to control noise are advisable, as are residential insulation standards.

Whether a new industry or commercial enterprise is locating near existing residences, or vice versa, noise considerations should include:

1. Business Hours and Number of Persons Employed

Are there or will there be 24-hour operations which mean shift changes and large numbers of cars starting up late at night? What roads will they use? Does the establishment stay open late? When are the busiest hours of operation?

2. Maintenance Activities

What kind of plant or office maintenance activities occur or will occur and at what time of day? (Daily garbage pickups or noisy parking lot sweeping may occur in the very early morning.)

3. Deliveries and Pickups

Will trucks need to make deliveries or pickups? At what time and how often will they come? On what roads do or will the trucks travel? Does the industry use rail service? How often are train car pickups? Will the industry be using refrigerator cars?

4. Machinery

What machinery on the premises may be bothersome to nearby residents, and what are the noise levels of these machines? Do they contain piercing tones? How often and at what time of day do or will they run? Will fans or other steady noises provide a higher than desirable background noise level for a residential area?

5. Plant or Office Expansion Plans

6. Sound Level Measurements to determine existing noise conditions.

Both industry and commercial activities generate truck and automobile traffic. Thus, they should be located in areas where truck access is possible without having to pass through residential areas.

The noise ordinance is also the most effective tool for resolving noise problems existing between industrial/commercial areas, and residential uses. It provides an objective guide for a mediator to use in defining the problem and in working out solutions.

Other

Construction and maintenance activities are a further potential problem which should be mentioned here. Several methods can be used to reduce noise impacts from construction sites.

Curfews on operations are the primary method used to mitigate noise impacts from private construction activities. Some public agencies have also established decibel limits on the amount of noise a construction site may generate. (These could be included in a commercial noise ordinance.)

Specific measures used to control construction site noise include operating only certain equipment at one time; moving some of the noisiest equipment items farther into the construction site; using temporary walls or complete enclosures around certain equipment; modifying the equipment to make less noise through muffling; or buying quieter replacement equipment or substituting quieter processes when possible.

City and county maintenance and public works activities are other sources of temporary noise which are reduced by the methods listed above. A city or county may also put noise specifications into city or county contracts such as garbage collection contracts or public construction contracts.

4.3 SEISMIC SAFETY AND SAFETY ELEMENT⁵⁰

4.3.1 Seismic Hazards

(See the Plan Policies Report, Policy Area 29.)

Seismicity

Seismic activity is caused by release of energy that has been stored within the earth. It is believed that this energy is generated by forces that are causing the earth's continents to move apart. This theory, called "Plate Tectonics," holds that the earth is made up of several large plates that are moving past each other. As the plates move past one another, stress builds and many adjustments take place in the earth's crust. Since the earth's bedrock formations are somewhat elastic, they may, under pressure from plate movements, bend and become permanently distorted, forming mountains and valleys, or store energy to be released later.

When the stress is great enough, the earth's crust breaks or slips along an old crack (fault) or forms a new one. Areas where a number of parallel slippages occur are called fault zones. When an earthquake occurs, the break along the fault begins in a small area and rapidly moves up and down the fault. The location of the first release of energy is called the focus. The point on the earth's surface directly above the focus is called the epicenter.

Releases of energy may occur in a few large amounts or in more numerous, smaller amounts. A more or less constant release of energy (creeping) can also occur. During an earthquake, opposite sides of a fault move in relation to each other. Movement might occur at great depths and be hidden within the earth or may extend to the earth's surface and form a surface break (trace).

The stress release of an earthquake is expressed in several ways on the earth's surface. The most common expression is groundshaking, the result of wave movement through the earth's crust. This ground motion is not constant.

The type, configuration, depth, and density of underlying soil and rock, together with distance, determine the direction and speed of groundshaking. As ground waves pass from rock to less dense materials (e.g., alluvial or water-saturated soils), they reduce speed and generally increase in the extent of vibration, resulting in shaking for a longer period of time with larger, slower vibrations. Therefore, distance from an earthquake alone does not necessarily determine the intensity and duration of groundshaking that will occur. Surface topography also can amplify earthquake waves.

^{4.3}
⁵⁰ This section is excerpted from the San Joaquin County Council of Government, Seismic Safety and Safety Element, and has been edited for the Tracy General Plan.

Measures of Seismic Activity

Earthquakes are measured in two different ways: 1) by their physical effects and 2) by the amount of energy being released. The scale used to measure intensity (physical effects) of an earthquake is the Modified Mercalli Scale, and the scale used to measure the magnitude of earthquakes (energy released) is the Richter Scale.

The intensity of the physical effects of earthquakes are based on human reactions at the low end of the Modified Mercalli Scale (e.g., "felt indoors by a few") and by geologic effects at the high end of the scale (e.g., "numerous and extensive landslides"). The middle range is based largely on the degree of damage to man-made structures. Ratings are based on human observations and are not measured with instruments. The intensity of an earthquake varies from place to place because of geologic conditions, distance from the earthquake epicenter, and type of building structures. Table 4.3.1 describes the 12 Mercalli scale levels of intensity.

In 1932, Charles Richter devised a method of measuring the magnitude of an earthquake using seismic instruments. The magnitude is a number assigned to the calculated energy release of an earthquake. This system can be used to rank and compare the energy release of various earthquakes.

The Richter Scale is logarithmic. An increase of one number in magnitude is the same as a 32 times increase in energy. Thus a magnitude 7 earthquake releases 32 times more energy than a magnitude 6 earthquake. Figure 4.3.1 compares different events on the Richter Scale.

Earthquake Faults

Faults are indications of past seismic activity. It is assumed that those that have been active recently are the most likely to be active in the future, although even an inactive fault may not be "dead." Seismic activity is measured in geologic terms, or geologic time. Geologically recent is within the past two million years (the Quaternary period). All faults believed to have been active during Quaternary time are considered "potentially active" by the State Division of Mines and Geology. Those which have exhibited activity within the last 11,000 years are called "active." If a fault is considered to be "historically active," it has exhibited activity within the last 200 years. Faults for which there is no evidence of activity during the last two million years are considered to be inactive.

Faults in and Near San Joaquin County

Figures 4.3.2 and 4.3.3 illustrate faults located within or near San Joaquin County. Seismic activity on these faults or in these fault zones has the greatest potential for causing damage in the county. Some of the faults are active and some inactive, as discussed below. Seismic activity in other parts of the state can also affect the county, but its potential impact is not as great. Table 4.3.2 identifies the maximum credible or probable earthquake intensities that have a probability of occurring in San Joaquin County.

TABLE 4.3.1
MODIFIED MERCALLI SCALE

THE MERCALLI INTENSITY SCALE
(As modified by Charles F. Richter in 1956 and rearranged)

If most of these effects are observed	then the intensity is:	If most of these effects are observed	then the intensity is:
Earthquake shaking not felt. But people may observe marginal effects of large distant earthquakes without identifying these effects as earthquake-caused. Among them trees, structures, liquids, bodies of water sway slowly, or doors swing slowly.	I	Effect on people: Difficult to stand. Shaking noticed by auto drivers. Other effects: Waves on ponds; water turbid with mud. Small slides and caving in along sand or gravel banks. Large bells ring. Furniture broken. Hanging objects quiver.	VIII
Effect on people: Shaking felt by those at rest, especially if they are indoors, and by those on upper floors.	II	Structural effects: Masonry D* heavily damaged; Masonry C* damaged, partially collapses in some cases; some damage to Masonry B*; none to Masonry A*. Stucco and some masonry walls fall. Chimneys, factory stacks, monuments, towers, elevated tanks twist or fall. Frame houses moved on foundations if not bolted down; loose panel walls thrown out. Decayed piling broken off.	
Effect on people: Felt by most people indoors. Some can estimate duration of shaking. But many may not recognize shaking of building as caused by an earthquake; the shaking is like that caused by the passing of light trucks.	III	Effect on people: General fright. People thrown to ground. Other effects: Changes in flow or temperature of springs and wells. Cracks in wet ground and on steep slopes. Steering of autos affected. Branches broken from trees.	
Other effects: Hanging objects swing. Structural effects: Windows or doors rattle. Wooden walls and frames creak.	IV	Structural effects: Masonry D* destroyed; Masonry C* heavily damaged, sometimes with complete collapse; Masonry B* is seriously damaged. General damage to foundations. Frame structures, if not bolted, shifted off foundations. Frames racked. Reservoirs seriously damaged. Underground pipes broken.	IX
Effect on people: Felt by everyone indoors. Many estimate duration of shaking. But they still may not recognize it as caused by an earthquake. The shaking is like that caused by the passing of heavy trucks, though sometimes, instead, people may feel the sensation of a jolt, as if a heavy ball had struck the walls.	V	Effect on people: General Panic. Other effects: Conspicuous cracks in ground. In areas of soft ground, sand is ejected through holes and piles up into a small crater, and, in muddy areas, water fountains are formed.	X
Other effects: Hanging objects swing. Standing autos rock. Crockery clashes, dishes rattle or glasses clink. Structural effects: Doors close, open or swing. Windows rattle.		Structural effects: Most masonry and frame structures destroyed along with their foundations. Some well-built wooden structures and bridges destroyed. Serious damage to dams, dikes and embankments. Railroads bent slightly.	
Effect on people: Felt by everyone indoors and by most people outdoors. Many now estimate not only the duration of shaking but also its direction and have no doubt as to its cause. Sleepers awakened.		Effect on people: General panic. Other effects: Large landslides. Water thrown on banks of canals, rivers, lakes, etc. Sand and mud shifted horizontally on beaches and flat land.	XI
Other effects: Hanging objects swing. Shutters or pictures move. Pendulum clocks stop, start or change rate. Standing autos rock. Crockery clashes, dishes rattle or glasses clink. Liquids disturbed, some spilled. Small unstable objects displaced or upset. Structural effects: Weak plaster and Masonry D* crack. Windows break. Doors close, open or swing.	VI	Structural effects: General destruction of buildings. Underground pipelines completely out of service. Railroads bent greatly.	
Effect on people: Felt by everyone. Many are frightened and run outdoors. People walk unsteadily. Other effects: Small church or school bells ring. Pictures thrown off walls, knickknacks and books off shelves. Dishes or glasses broken. Furniture moved or overturned. Trees, bushes shaken visibly, or heard to rustle. Structural effects: Masonry D* damaged; some cracks in Masonry C*. Weak chimneys break at roof line. Plaster, loose bricks, stones, tiles, cornices, unbraced parapets and architectural ornaments fall. Concrete irrigation ditches damaged.	VII	Effect on people: General panic. Other effects: Same as for Intensity X. Structural effects: Damage nearly total, the ultimate catastrophe. Other effects: Large rock masses displaced. Lines of sight and level distorted. Objects thrown into air.	XII
		Masonry A. Good workmanship and mortar, reinforced, designed to resist lateral forces. Masonry B. Good workmanship and mortar, reinforced. Masonry C. Good workmanship and mortar, unreinforced. Masonry D. Poor workmanship and mortar and weak materials, like adobe.	

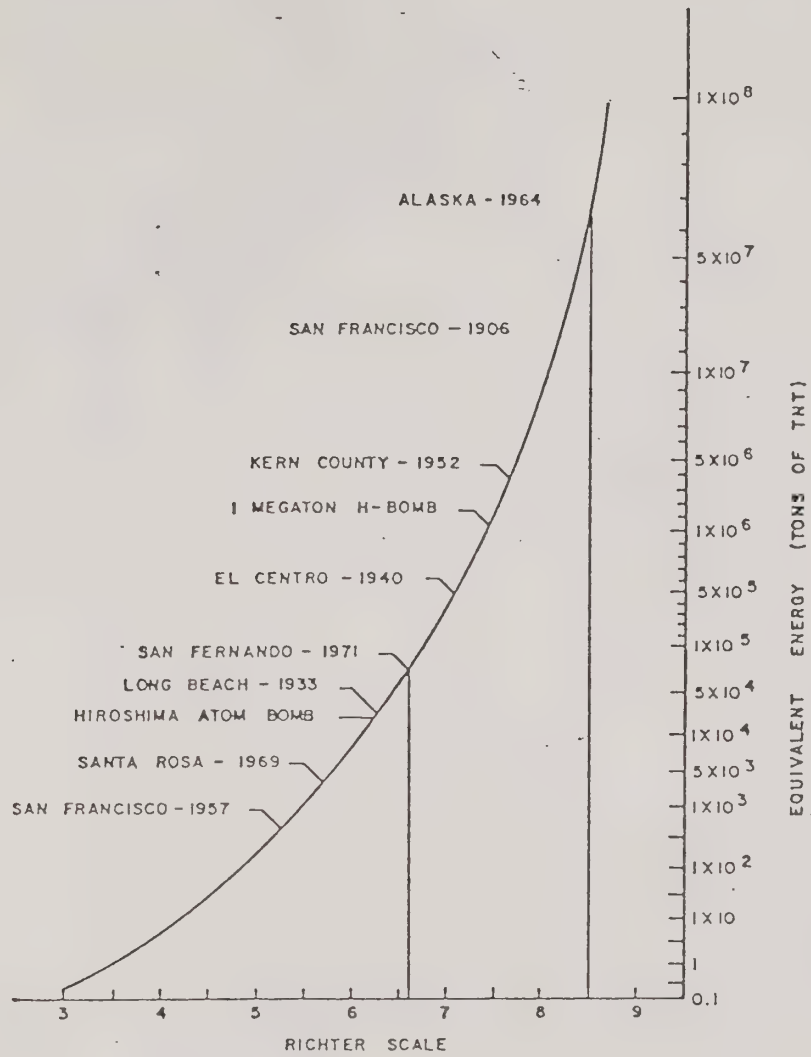


Figure 4.3.1 RICHTER SCALE OF MAGNITUDE

Source: San Joaquin County Planning Department

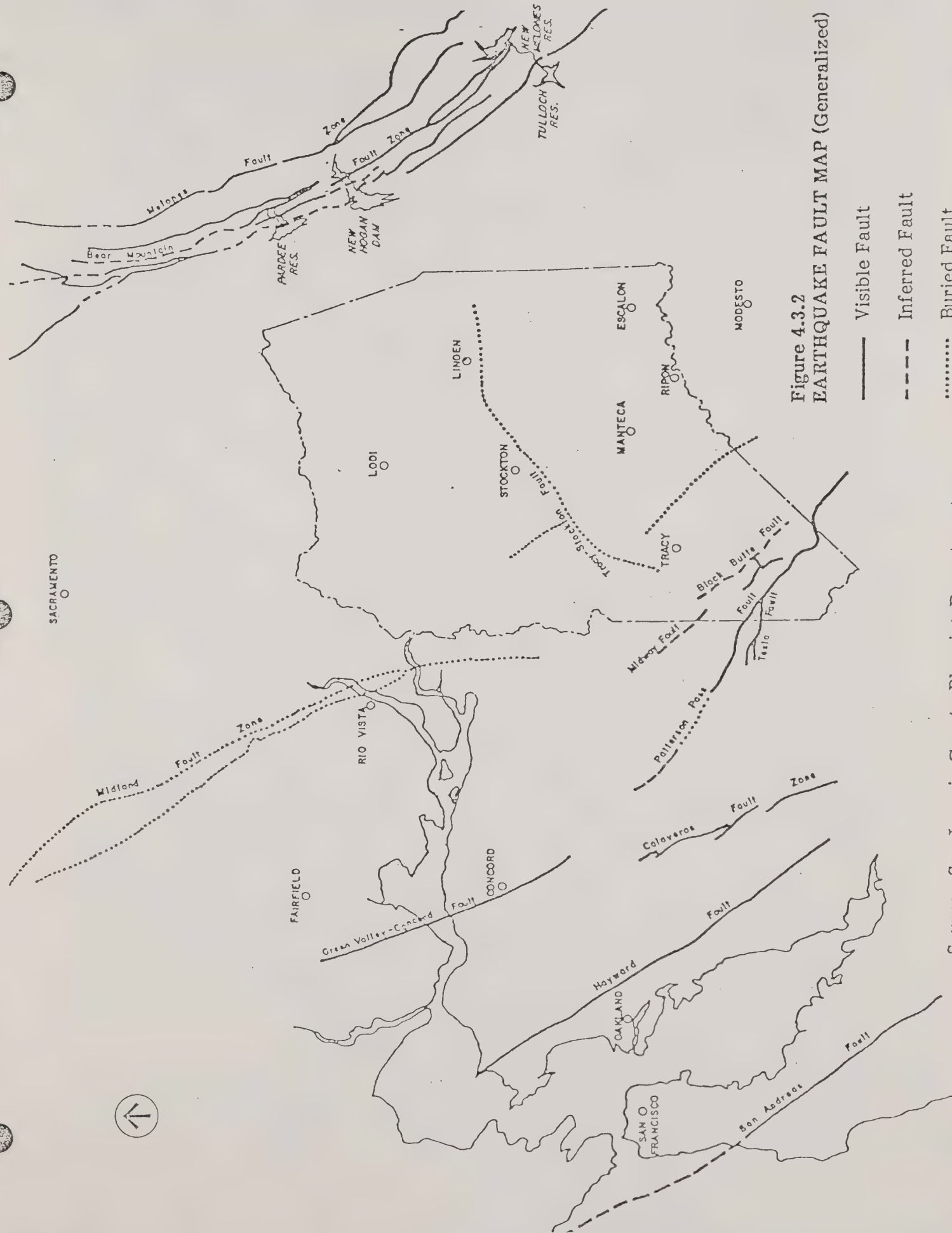


Figure 4.3.2
EARTHQUAKE FAULT MAP (Generalized)

- Visible Fault
- - - Inferred Fault
- Buried Fault

Source: San Joaquin County Planning Department

Source: San Joaquin County Planning Department

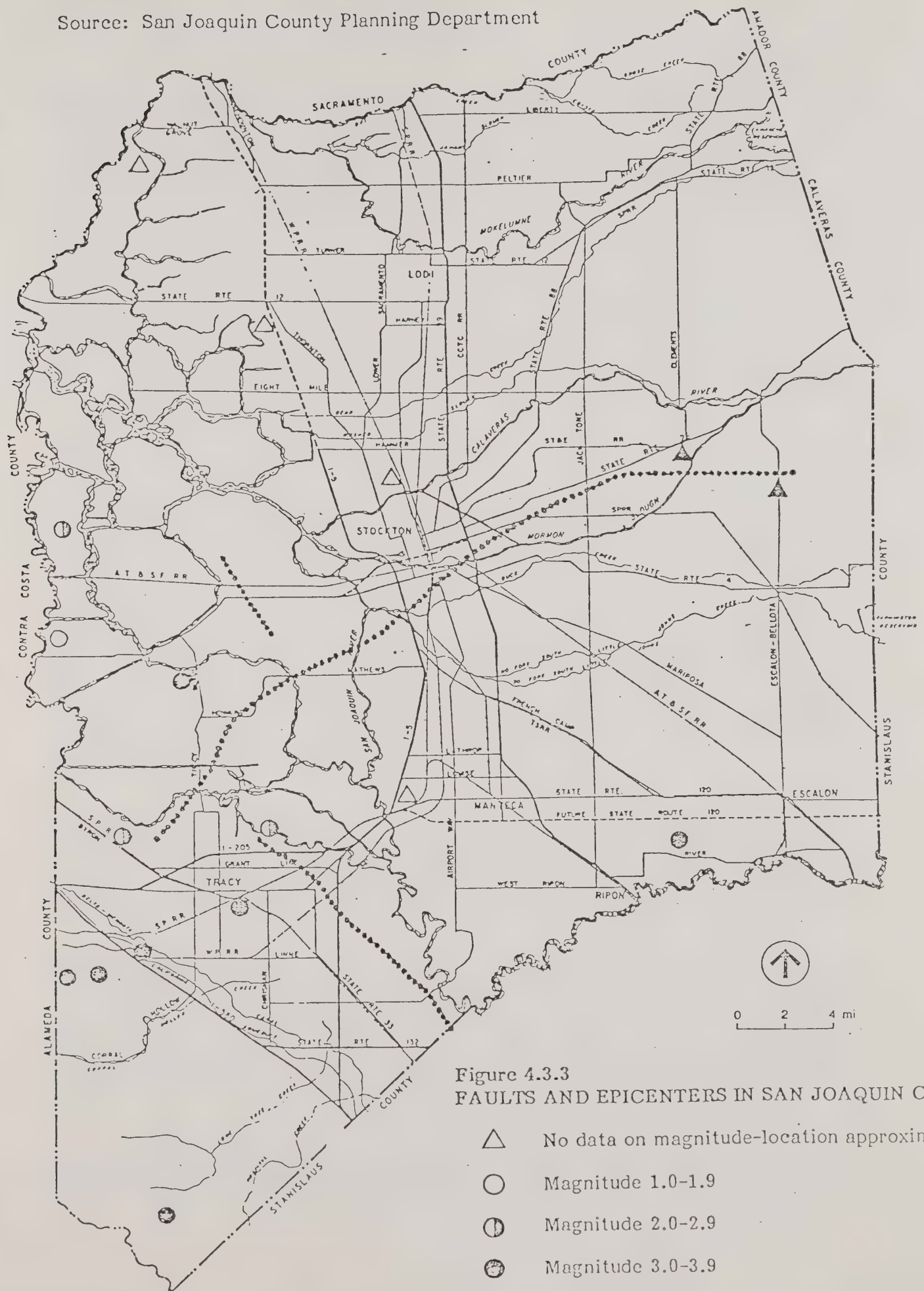


Figure 4.3.3
FAULTS AND EPICENTERS IN SAN JOAQUIN COUNTY

- △ No data on magnitude-location approximate
- Magnitude 1.0-1.9
- ⊙ Magnitude 2.0-2.9
- ⊗ Magnitude 3.0-3.9
- ▲ Magnitude 4.0 and greater

San Andreas Fault Zone. The San Andreas Fault is one of the longest, most thoroughly studied, and most active faults in the world. Some sections in the Central Coast Range south of San Joaquin County are creeping at rates as great as 3.5 centimeters per year. Other segments, north and south of the creep areas, exhibit essentially no movement. The fault in those areas appears to be temporarily "locked." It is generally agreed that a "locked" condition allows stresses to accumulate more rapidly, thus shortening the time between major earthquakes.

It is possible to demonstrate an accumulated offset along the San Andreas Fault measured in hundreds of miles, occurring over a period of tens of millions of years. Since there is presently movement along some of its length, and numerous smaller earthquakes are recorded as emanating from the fault zone, it is practically a certainty that moderate to great earthquakes will occur on the San Andreas Fault in the foreseeable future. The maximum probable intensity that could occur in San Joaquin County would be VIII or IX—large enough to cause fright and serious damage.

Hayward Fault. The Hayward Fault is located east of San Francisco Bay and extends southeast to where it probably merges with the Calaveras Fault north of Hollister. A review of the recent history of this fault shows two major earthquakes (1836 and 1868), each with an estimated Richter Scale magnitude of 6.5 to 7.5. Current measurements indicate creeping at rates up to 1 centimeter per year in places. Numerous small earthquakes (Richter Scale magnitude of 3 to 5) have occurred along this fault in recent years, indicating continued activity.

Calaveras Fault. The Calaveras Fault borders the eastern flank of the Berkeley-Hayward Hills and extends to the southeast where it joins the San Andreas Fault south of Hollister. Epicenters of recent earthquakes with Richter Scale magnitude up to about 4.5 have been located along, or near, this fault. In 1968, an earthquake of unknown magnitude caused ground breakage near Danville. Several centimeters of creep have been measured in Hollister, where a Calaveras Fault trace cuts through a residential area. The pattern of offset curbs and sidewalks is similar to that of creep and faulting along other branches of the San Andreas system.

Green Valley-Concord Faults. This fault zone, extending from Walnut Creek to west of Fairfield, has experienced displacement throughout most of its length within recent geologic time. An earthquake of 5.4 magnitude occurred in 1955 along part of the fault near Concord. There is currently evidence of some movement along the fault in the City of Concord. The greatest probable earthquake generated by this fault is not expected to exceed a magnitude of 7.0 on the Richter Scale.

Midland Fault. The Midland Fault, buried under recent alluvium, extends north from Bethel Island in the San Joaquin Delta to east of Lake Berryessa. Its activity is not as well documented as the previously discussed faults. However, there is evidence that fault displacement has occurred during recent geologic time. Also, the State Division of Mines and Geology believes that the Midland Fault is a possible source of a major earthquake centered near Vacaville in 1892. The maximum probable earthquake that would be generated by this fault is a magnitude of 7.0 on the Richter Scale.

San Joaquin Fault Zone and Greenville Fault Zone. Two new fault systems have recently been identified by the U.S. Geological Survey. The San Joaquin Fault Zone extends from Tracy to Los Banos, paralleling the I-5 freeway. Geologic studies show

Special Fire Hazards

There are two types of fire hazards that deserve special discussion, either because of their importance in Tracy or because of their potential impact on a large number of people.

Rangeland, Brush, and Grass Fires. These fires are an annual hazard in Tracy and account for more than 20 percent of the total fires. Summers are long, hot, and dry, with temperatures often exceeding 100°F. Where there is easy human access to dry vegetation, fire hazards increase because of the greater chance of human carelessness; high hazard areas include outlying residential parcels, open lands adjacent to residential areas, and unirrigated parklands.

Chemical Fires. Industries that manufacture, store, handle, or transport petroleum, explosive, and other flammable materials create special fire hazards.

It is important that local fire districts be aware that hazardous materials are being stored and that the fire fighters know the types and locations of the stored materials. In the event of a fire, knowledge of the extent of the hazard can permit early evacuation of nearby areas, if necessary.

Knowledge of the type of hazardous material is also necessary in order to properly and safely fight the fire. For example, organic phosphates, which are heavily used (and stored) pesticides in an agricultural county, could cause a disaster. Water vaporizes organic phosphates. In a fire this vapor can rise, be blown over a populated area, and settle. It is absorbed through the skin and acts like nerve gas. Organic phosphates would not pose as serious a danger if allowed to burn.

Fire Protection

The degree of fire protection which an individual property or an area receives is dependent upon a number of factors: fire protection regulation capability of the department (personnel and equipment), adequate water availability, accessibility to the fire, and response time. These factors are also considered by insurance companies in determining fire insurance rates. It is often found that the cost of providing a higher degree of protection is offset by the reduction in the cost of fire insurance.

The City of Tracy has adopted the Uniform Fire Code, 1979 Edition. The Tracy Fire Department serves as the review and enforcement agency for the regulations and performs inspections, investigates arson fires, and instructs in and develops fire prevention methods.

All public fire protection agencies in San Joaquin County operate under a master mutual aid agreement. When a fire agency's normal facilities are exhausted, other fire departments may be called in to provide assistance at no charge to the responsible fire agency. In addition to mutual aid, which involves a request, some fire districts have automatic response areas. If a structural fire should occur in an automatic response area (generally an area remotely located from all the district stations), all districts which have entered into the agreement will respond automatically, ensuring an increased amount of available water to combat the fire.

TABLE 4.3.8
WATER SYSTEM STANDARDS

I. Required Fire Flow - Residential Districts

	<u>GPM</u>	<u>Duration</u>
A. Buildings of small area, low height, and large lots.	500	2 hours
B. Buildings of larger area, or higher and more closely built.	1,000	3 hours
C. High valve residences, apartment, tenements, dormitories, or similar structures.	1,500- 3,000	4 hours

II. Hydrant Pressure

A minimum residual water pressure of 20 psi is required during flow (may be reduced to 10 psi where hydrant spacing and main size requirements are met and where all hydrants are provided with at least one 4 1/2" outlet and such outlet is normally used by the fire department).

III. Water Main Size

- A. Minimum size shall be 6"; where blocks exceed 600' in length with no cross connections, main size shall be 8".
- B. Minimum size in high valve districts shall be 8" with intersecting mains in each street and 12" on principal streets and where long lines exist that are not connected to other mains at intervals close enough for proper mutual support.
- C. Gate valves shall be so located that no single case of accident, breakage, or repair to the pipe system, exclusive of arteries, will necessitate the shut-down of an artery or a length of pipe greater than 800'.

IV. Hydrant Distribution

- A. One hydrant shall be provided for each 120,000 square feet served by the system. Approximately 500' separation between hydrants.
- B. Hydrants shall have at least two 2 1/2" outlets. In high valve areas, hydrants shall have one large pumper outlet and at least one 2 1/2" outlet.
- C. Street connections shall be not less than 6" in diameter.
- D. A gate valve shall be provided on all connections between hydrants and street mains.

TABLE 4.3.8
WATER SYSTEM STANDARDS
(Continued)

V. Reliability of Supply

- A. Pumps shall, if possible, receive electrical power from separate sources to insure reliability.
- B. Automatic motor-driven power sources or adequate storage sources may be considered in lieu of the two separate sources of public utility power.

Water Supply and Pressure

Water is brought into the city from the treatment plant near the Municipal Airport in a 36-inch transmission line terminating at an overhead tank at Sixth Street. A fire flow of 2,500 gallons per minute (gpm) is added to the system during an average maximum day flow rate. This is based on current Insurance Service Office (ISO) standards (see Table 4.3.8). The minimum ISO standard for service pressure at fire flow conditions is 20 pounds per square inch (psi) at the hydrant steamer nozzle. Pressure on hydrants in Tracy range from a low of 58 psi to a high of 72 psi.

Response Time

The time between the start of a fire and the arrival of the Fire Department can be crucial. Table 4.3.9 presents the Tracy Fire Department's response times to key areas under the present station configuration and manning. This will need to be revised when the new North Station is in operation.

TABLE 4.3.9
TRACY FIRE DEPARTMENT RESPONSE TIMES, 1980

<u>Location</u>	<u>Current Response</u>
North Tracy	0-6 minutes
Larch-Clover Area	3-4 minutes
Holly Sugar	4 minutes
Commercial on E. Eleventh Street	4 minutes
Midway Subdivision	4 minutes
Laura Scudders	5 minutes

Fire Prevention

Fire prevention programs in Tracy include inspection of property for fire hazards, enforcement of weed abatement regulations, and public education programs. Table 4.3.10 summarizes the fire prevention activities of the Tracy Fire Department.

TABLE 4.3.10
FIRE PREVENTION ACTIVITIES OF
THE TRACY FIRE DEPARTMENT: 1979-1980

<u>Activity</u>	<u>1979</u>	<u>1980</u>
Number of inspections	414	304
Number of notices	83	62
Number of complaints investigated	43	36
Number of fire investigations	14	20
Hours of prefire planning	194	191
Hours of public education	257	226
Number of fire permits issued	52	43
Hours of weed abatement	590	440

The only mandated fire inspection is the inspection the State of California requires of schools once a year. Businesses that deal in hazardous chemicals and any business that manufactures or stores a large quantity of combustible materials, such as lumberyards, should receive regular inspections. There should be frequent inspection of structures for group assembly and for housing. In order to be familiar with the types and locations of hazards, those who will be fighting a fire should make the inspections.

The Tracy Fire Department conducts annual inspections for one-third of the city. Each structure is inspected once every three years. Inspections are conducted by company personnel; each department shift is assigned an annual load of inspections to complete. The Tracy Fire Department has also participated with McDonald's in a Home Safety Fire Check Program, in which the resident receives a coupon redeemable at McDonald's after participating in the safety check.

Weed abatement in Tracy is under the jurisdiction of the Fire Department. One fireman is responsible for the inspection of 7,000 lots. In cases of non-compliance with weed abatement regulations, a city-hired contractor is called in twice a year to remove weeds. Property owners are then billed for the cost of removal plus 25 percent to cover the city's costs.

Public education programs for fire prevention in Tracy include a Junior Fire Marshall Program in the public schools and talks to service organization.

4.3.6 Emergency Preparedness

(See the Plan Policies Report, Policy Area 34.)

Prevention is the most economical, cost-effective, and least stressful way to save lives and preserve property. Building on stable, flood-free soils; proper storage of hazardous materials; radar to detect speeding vehicles; fire marshall and prefire inspections; railroad crossing controls; bicycle lanes; patrol of swimming areas; airport clear zones; and safety education classes do save lives and preserve property; however, safety is also planning and preparing for emergency situations. The local community must anticipate possible needs and be able to respond to all emergencies to the fullest extent of its resources.

Identification, planning, coordination, and preventive action are the key elements of emergency preparedness.

The local community must identify and recognize potentially hazardous situations that cannot be prevented and determine what level of risk and emergency preparedness is acceptable. Local capabilities in the areas of facilities, equipment, and trained manpower must also be identified before alternative courses of action can be plotted. All sectors of the community should be involved in planning how to best meet the objectives of emergency preparedness—the saving of lives, preservation of property, and, of equal importance, the continued functioning of the social and physical system in which we live. Local capabilities and resources must then be coordinated to achieve the most efficient and effective emergency response with the objective of handling and containing the situation without causing additional problems.

Four broad levels of emergency planning and preparedness are discussed in this section: 1) short-term emergencies, 2) long-term emergencies, 3) disasters, and 4) decisions and actions of the government or private sector that can hamper or facilitate emergency response.

Short-Term Emergencies

Short-term emergencies happen with little or no warning and are generally confined to a single area; for instance, sudden acute injury or illness, a house fire, or auto accident. Some emergencies can be taken care of by those involved; however, most require the aid of trained professionals, such as repair persons, emergency medical technicians, paramedics, doctors, nurses, firemen, and policemen, who are prepared to handle "short-term" emergency situations as part of their daily jobs, and to mobilize as part of a bigger organization in case of disaster.

Short-term emergencies differ from disasters and long-term emergencies in intensity and degree of mobilization; however, they all require private and public commitment of resources, expenditures, and human risk.

In addition to short-term emergencies, the community must be prepared to react and function when there are non-disaster emergencies such as power blackouts or brown-outs, gas or water line breaks, sewer system failure, sudden need to dispose of large quantities of water that might normally be otherwise processed or taken out of the City for disposal, source contamination of water supplies, inadequate sanitary facilities where there are crowds of people, road blockages, or prison breaks.

All of these situations require the mobilization of human and physical resources, and are related to land use. Although it is everyone's responsibility to prepare for these kinds of emergencies to some degree, actual responsibility for program organization and subsequent action rests primarily with local government.

Emergency Medical Services

Emergency medical services in the City of Tracy are available at Tracy Community Memorial Hospital on Tracy Boulevard. The hospital, owned by a non-profit association, has a 59-acute bed capacity, with emergency services in a separate room. There is one full-time staff physician and one anesthesiologist available 24 hours a day. The hospital is equipped to handle psychiatric emergencies and has both intensive care and cardiac care units. Emergency communication capabilities include a two-way radio communication with other hospitals, with ambulances and ambulance bases, with central dispatch, and with the Tracy Police Department. Advance radio communication regarding prior care given is also available.

Ambulance service in Tracy is provided by a private company, 911 Emergency Services. Average ambulance response time is 4.38 minutes. Ambulances have both attendants and paramedics. All ambulance attendants have training as an EMT-1 (Emergency Medical Technical-1) and are prepared to appraise the condition of the victim, assess the effectiveness of whatever care was provided prior to their arrival, and then continue to maintain the victim by means of life support measures until care is assumed by licensed health professionals. Paramedics are certified life

support personnel, trained and authorized to inject drugs and intravenous fluids, heart defibrillation, and electrocardiogram monitoring, in addition to basic and specialized emergency medical skills.

Long-Term Emergencies

Long-term emergencies are not everyday occurrences, and generally happen over a period of time. However, they often spawn short-term types of emergencies and like many short-term emergencies, have the potential for becoming disasters. These kinds of emergencies include drought, heat waves, epidemics, pestilence, long periods of fog, labor strikes, gasoline and energy shortages, cold snaps, economic depression, transportation shutdowns, and animal diseases.

Long-term emergencies generally affect a large region; therefore, governmental action is necessary to coordinate relief efforts. In addition to assuming the role of coordinator and response agent, the local government must be programmed to recognize long-term emergencies in time to develop specific actions to mitigate the problem and possibly avert disaster.

Disaster Planning

Disaster planning and relief involves not only emergency professionals, but other sectors of the community as well, depending upon the disaster.

The key to effective disaster preparedness and action is a workable plan, practice, and more planning, involving those people who will probably be the first to respond.

A very important aspect of disaster preparedness is the training of personnel to evaluate emergency situations and recognize those which are potential or real disasters so that the emergency organization set up in the emergency plan can be mobilized as early as possible when it can be most effective.

Specific Emergency Plans. The City of Tracy Emergency Plan is programmed for activation during any one or more of three broad kinds of emergency situations: state of war emergency, state of emergency in an area that includes the city, and local state of emergency. The city plan is described at the end of this section. A San Joaquin County Dam Failure Plan was prepared in 1977 by the Office of Emergency Services.

The principal objectives of the Dam Failure Plan are to provide a framework for orderly alert and evacuation, and subsequent security of flood areas. The plan also defines general organizational responsibilities, and specific responsibilities and facts for each of the dams whose failure would cause flooding in San Joaquin County.

Maps for each dam delineate probable areas of inundation, flood wave arrival times, and evacuation routes. Threatened key facilities and unique institutions are also listed. Mass care facilities, staging areas, emergency operating centers, and airports have been identified in the Dam Failure Plan; however, these facilities can be used as needed in case of any disaster. All of the schools in the county, community centers, lodges and clubhouses, and, in some cases, churches are mass care centers.

If necessary, tents can be erected in predesignated areas, in addition to the use of motels and private homes. When the disaster is of a magnitude that out-of-county assistance is required, a system of radio alert and activation of internal emergency plans has been established under the provisions of the State Master Mutual Aid Agreement.

Multiple disasters are a possibility in Tracy. For instance, an earthquake could cause complete failure of utilities, communication systems, and transportation networks throughout the county, at the same time causing a dam failure resulting in the threat of inundation. Levee breaks due to liquefaction in the Delta could compound the problem with inundation of additional areas that would have otherwise been flood-free. The problems are obvious—where do people go, how do they get there, and what are the priorities for relief efforts.

Disaster preparedness and response is definitely related to land use and other aspects of community planning. Nearly all physical systems must become an asset to the relief effort, and if not properly planned prior to a disaster, they could become a liability or even a hazard.

The City of Tracy Emergency Plan. The Emergency Plan is a comprehensive disaster preparedness program, concerned not only with a war threat, but primarily with the threat of disaster as a result of natural and/or man-made hazards and factors. The City of Tracy Emergency Plan states:

"This plan will be placed in effect upon the existence of declaration of a state of extreme emergency in the State of California.

"It may also be placed in effect in case of local disaster by action of local government."⁵⁴

Proper planning and utilization of an emergency plan reduces reaction times and improves coordination, thereby saving lives and preserving property. The existence and maintenance of operable local emergency plans make it possible to use existing resources and capabilities at greater levels of efficiency and effectiveness. The proper development and implementation of a local plan also prompts identification of potentially disastrous situations, and subsequent development of measures aimed at weakening the impact or alleviating the hazard.

The plan states: "Civil government, augmented and reinforced during an emergency, conducts emergency operations, provides or utilizes mutual aid, and controls critical and essential resources. Civil government also provides support to military forces engaged in retaliatory or defensive operations."⁵⁵

⁵⁴City of Tracy, Emergency Plan, Tracy, January 1977.

⁵⁵Ibid.

The purpose of the basic Emergency Plan and the more detailed divisional plans, called annexes, is to:

1. Provide a basis for the conduct and coordination of emergency operations and the effective management of critical resources during emergencies.
2. Establish a mutual understanding of the authority, responsibilities, functions, and operations of civil government during emergencies.
3. Provide a basis for incorporating into the county emergency organization non-governmental agencies and organizations having resources necessary to meet foreseeable emergency requirements.

The plan identifies foreseeable organizational requirements, tasks, resource requirements, and basic procedures for the conduct of emergency operations. Non-essential governmental and private activities may be reduced or stopped, depending upon emergency conditions.

The plan was adopted with the following assumptions and objectives:

1. The responsibility for emergency preparedness rests with civil government at all levels.
2. Adequate pre-emergency testing of facilities and equipment will ensure reliable functioning.
3. Available warning time, used effectively, will decrease potential life and property loss.
4. The nature and extent of an emergency will govern which elements of the emergency organization will mobilize and respond.

The City of Tracy Emergency Plan permits the preparation for and the operation of essential services on order to:

1. Save lives and property.
2. Repair and restore essential systems and services.
3. Provide for the protection, use, and distribution of remaining resources.
4. Provide a basis for direction and control of emergency operations.
5. Provide for the continuity of government.
6. Coordinate operations with the emergency service organizations of other jurisdictions.

The Emergency Plan goes into effect:

1. Automatically by the existence of a state of war emergency.
2. When the Governor has proclaimed a state of emergency.

3. On the order of the City Manager, acting as Director of Emergency Services, provided the existence of a local emergency has been proclaimed in accordance with the provisions of the Emergency Services Ordinance of the county.

In addition, the Director of Emergency Services is authorized to order the mobilization of the county emergency organization or any portion of the organization in order to provide for increased readiness in the event of the threatened existence of an emergency prior to the full implementation of the plan.

Decisions and Actions Affecting Emergency Preparedness

The final level of emergency preparedness is the responsibility of those who make decisions and take actions on programs or projects that can have a very important and relatively unrecognized effect on emergency preparedness and response.

Design considerations such as driveway widths, building overhangs, road widths and turnarounds, parking facilities, door and window locations, and site design can hamper or facilitate the movement and use of equipment and emergency response efforts.

Radio Communication. On a daily basis and in time of disaster, radio communication systems are one of the most important aspects of emergency preparedness. The emergency-related networks in use in Tracy at the present time are summarized in Table 4.3.11.

TABLE 4.3.11
RADIO SYSTEMS SUBJECT TO CITY CONTROL

<u>Radio System</u>	<u>Provides Service to:</u>
Sheriff	Law enforcement
Fire	Fire, <i>Building safety</i>
Local government	Engineer, <i>General Government, streets and utilities</i>
Police	Supply, manpower, and transportation
Citizens band	Shelter and welfare
Industrial	Engineer, transportation, health, and medical

Management,

4.3.7 Air Quality

(See the Plan Policies Report, Policy Areas 12, 14, 15, and 35.)

Environmental Setting

A. Climate⁵⁶

Climate may be the single most important factor influencing smog concentrations in the San Joaquin Valley air basin. Violations of smog standards in the basin have occurred between April and October, with the worst violations occurring when the temperature approached or exceeded 100°F. There are several meteorological factors characteristic of the San Joaquin Valley which combine to create high smog concentrations:

1. The San Joaquin Valley experiences high summertime temperatures, which accelerate the rate of smog formation.
2. The Valley is dominated by high pressure in the summer, creating stable air with low wind speeds. As a result, there is very little atmospheric mixing and pollutants do not readily disperse.
3. Temperature inversions (an increase in temperature with height) frequently trap pollutants close to the ground, thereby increasing the pollutant concentrations and further inhibiting dispersion.⁵⁷

B. Topography

The Tracy planning area is located approximately in the middle of the Sacramento/San Joaquin Valley, which is about 500 miles long and 50 to 100 miles wide.

The trough-like configuration of the Valley forms an ideal trap for pollutants. Mountain ranges surrounding the Valley restrict the horizontal airflow and often present temperature inversions prevent the air from rising vertically above the height of the mountains. The area's geographical features, in effect, form a bowl and the inversions act as a lid on the bowl, preventing the escape of pollutants that enter the Valley's atmosphere. As the level of the inversion lowers, the pollutants are trapped in a smaller volume of air, increasing their concentration.⁵⁸

⁵⁶For additional information on the climate and topography of the Tracy area, see Section 4.1.4 of the Technical Supplement.

⁵⁷San Joaquin County Air Quality Technical Committee, 1978. Air Quality Report III, The Recommendations: Stockton.

⁵⁸Ibid.

Emission Effects

To assist in the evaluation of the air pollution situation with respect to air quality standards, air pollution episode criteria, and the control of photochemical smog, effects of the various contaminants are discussed briefly.

1. Carbon Monoxide: CO. A colorless, odorless, toxic gas produced by incomplete combustion of carbon-containing substances. Carbon monoxide concentrations are generally higher in the winter when more fuel is burned and meteorological conditions favor the buildup of directly emitted contaminants. School and health warnings and alerts based on carbon monoxide occur almost entirely in winter.

Effects. Carbon monoxide does not irritate the respiratory tract but passes through the lungs directly into the bloodstream and, by interfering with the transfer of fresh oxygen to the blood, deprives sensitive tissues, primarily the heart and brain, of oxygen. It is not known to have adverse effects on vegetation, visibility, or material objects.

2. Oxides of Nitrogen: NO_x. There are many oxides of nitrogen, all of which are composed of just the two major elements of the atmosphere, oxygen and nitrogen, but only two are important in air pollution. These are: nitric oxide (NO), a colorless, odorless gas formed from atmospheric nitrogen and oxygen when combustion takes place under high temperature and/or high pressure; and nitrogen dioxide (NO₂), a reddish-brown irritating gas formed by the combination of nitric oxide with oxygen.

Effects. Oxides of nitrogen are direct participants in photochemical smog reactions. The emitted compound, nitric oxide, combines with oxygen in the atmosphere—in the presence of hydrocarbons and sunlight—to form dioxide and ozone. Nitrogen dioxide is the most significant of these pollutants. At high concentrations, which never occur in the ambient atmosphere, nitrogen dioxide is known to be toxic to man. It is considered to be a major air pollutant in the region because it is a primary receptor of ultraviolet light, which initiates the reactions producing photochemical smog.

3. Sulfur Dioxide: SO₂. A colorless, pungent irritating gas formed primarily by the combustion of sulfur-containing fossil fuels. In humid atmospheres, some of it may be changed to sulfur trioxide and sulfuric acid mist, with some of the latter eventually reacting with other materials to produce sulfate particulates.

Effects. At sufficiently high concentrations, sulfur dioxide irritates the upper respiratory tract; at lower concentrations, in combination with particulates, it appears able to do still greater harm by injuring lung tissues. Sulfur oxides, in combination with moisture and oxygen, can yellow the leaves of plants, dissolve marble, and eat away iron and steel. Sulfur oxides can also limit visibility and cut down the light from the sun.

4. Photochemical Oxidant: O_x. The term "photochemical oxidant" can include several different pollutants, but consists primarily of ozone (more than 90 percent) and a group of chemicals called organic peroxy nitrates, which comprise only a small percentage of the total. Photochemical oxidants are created in the atmosphere and are not emitted directly into the air. Reactive hydrocarbons and

oxides of nitrogen are the emitted contaminants which participate in the reaction. Ozone is a pungent, colorless toxic gas, which is produced by the photochemical process. Photochemical oxidant is a characteristic of Southern California-type smog, and reaches its highest concentrations during the summer and early fall. This is why most school and health warnings for ozone, as well as most ozone episodes, occur during the summer.

Effects. The common manifestations of oxidants are damage to vegetation and cracking of untreated rubber. Photochemical oxidants in high concentrations can also directly affect the lungs, causing respiratory irritation and possible changes in lung functions.

5. Particulates. Atmospheric particulates are made up of finely divided solids or liquids such as soot, dust, aerosols, fumes, and mists. About 90 percent (by weight) of the emitted particles are larger than 10 microns, but about 90 percent of the number of particulates are less than 5 microns in diameter. The aerosols formed in the atmosphere are usually smaller than 1 micron. In areas close to major sources, particulates are generally higher in the winter, when more fuel is burned, and meteorological conditions favor the buildup of directly emitted contaminants. However, in areas remote from major sources and subject to photochemical smog, particulates are higher during summer months.

Effects. In the respiratory tract, very small particles of certain substances may produce injury by themselves, or may act in conjunction with gases to alter their deposition sites and scope of action. Suspended in the air, particulates of aerosol size can both scatter and absorb sunlight, reducing the amount of solar energy reaching the earth, producing haze and reducing visibility. They can also cause a wide range of damage to materials.

6. Hydrocarbons and Other Organic Gases. Any of the vast family of compounds consisting of hydrogen and carbon in various combinations, found especially in fossil fuels, are known as hydrocarbons. Many hydrocarbon compounds are major air pollutants and those which can be classified as olefins or aromatics are highly photochemically reactive. Atmospheric hydrocarbon concentrations, in general, are higher in winter because the reactive hydrocarbons react more slowly in the winter and can accumulate in the atmosphere to higher concentrations.

Effects. Certain specific hydrocarbons, such as ethylene, damage plants by inhibiting growth and causing flowers and leaves to fall. Levels of hydrocarbons currently measured in urban areas are not known to cause adverse effects in humans. However, certain members of this contaminate group are extremely important components in the reactions that produce photochemical oxidants. The effects of oxidants, including respiratory irritation and damage to materials and vegetation, can be, at least in part, traced back to hydrocarbons.

Standards and Regulations

A. Federal and State Regulations

San Joaquin County has been identified by the California Air Resources Board and the U.S. Environmental Protection Agency as an area with an air pollution problem, and is designated as being within the San Joaquin-Stanislaus County Air Quality Maintenance Area (AQMA), established in an effort to meet the National Ambient Air Quality Standards (NAAQS). An AQMA is an area in which the NAAQS for any pollutant is not expected to be achieved or maintained during the period 1975-1985.

Three NAAQS are being exceeded. The Clean Air Act Amendments of 1977 require a plan for reducing these air contaminants in order to achieve NAAQS by 1987. The San Joaquin County Board of Supervisors has been designated the lead planning agency for attaining two of these air pollution standards, ozone and carbon monoxide. Planning a reduction program for the third air pollutant, total suspended particulates, is a responsibility of the California Air Resources Board.

Hydrocarbons (ROG) are considered to be the principal precursor in photochemical reactions that create ozone. Nitrogen oxides (NO_x) are also a significant ozone precursor and some NO_x control strategies parallel ROG reduction strategies, namely for emission controls on motor vehicles. Strategies for attainment of the carbon monoxide (CO) standard also generally parallel ROG reduction strategies, with the exception of enforcement of agricultural burning rules.⁵⁹

Both state and federal standards for oxidants have been exceeded yearly since 1963, when monitoring began. These standards are shown in Table 4.3.12.

B. San Joaquin County Air Quality Management Plan

The San Joaquin County Planning Department prepared the county's first Air Quality Plan in 1978, which was adopted by the Board of Supervisors in December of that year. This plan contained five reports with four supplemental documents and was submitted to the Air Resources Board and Environmental Protection Agency as part of the 1979 California State Implementation Plan (SIP) in order to meet planning requirements contained in the 1977 Clean Air Act Amendments (CAAA), which called for attainment of National Ambient Air Quality Standards (NAAQS) by the end of 1982. In the 1978 plan, San Joaquin County developed plans for attainment of the federal air quality standard for ozone and carbon monoxide. The federal ozone standard in 1979 was 0.08 ppm, but has been raised to 0.12 ppm. The carbon monoxide standard violated in San Joaquin County is the federal eight-hour standard (9 ppm average).

The county developed plans for emission reductions based on a peak ozone reading of 0.16 ppm. The hydrocarbon reduction needed to achieve the 0.08 ppm ozone standard was determined by a rollback method of calculation to 53.5 percent of the

⁵⁹San Joaquin County Planning Department, 1981 (September). Preliminary Draft: San Joaquin County Air Quality Management Plan: Stockton.

TABLE 4.3.12
AMBIENT AIR QUALITY STANDARDS

<u>Pollutant</u>	<u>Averaging Time</u>	<u>California Standards</u>	<u>National Standards^b</u>	<u>Objective</u>
Photochemical Oxidants	1 hr.	0.12 ppm ^c	--	To prevent eye irritation, breathing difficulties.
Ozone	1 hr.	--	0.12 ppm	
Carbon Monoxide	12 hr.	10 ppm	--	To prevent carboxyhemoglobin levels greater than 2%.
	8 hr.	--	9 ppm	
	1 hr.	40 ppm	35 ppm	
Nitrogen Dioxide	Annual Average		0.05 ppm	To prevent health risk and improve visibility.
	1 hr.	0.25 ppm		
Sulfur Dioxide	Annual Average		0.03 ppm	To prevent increase in respiratory disease; plant damage, and odor.
	24 hr.	0.05 ppm ^d	0.14 ppm	
	1 hr.	0.5 ppm		
Total Suspended Particulates	Annual Geometric Mean			To improve visibility.
	24 hr.	60 ug/m ^{3e} 100 ug/m ³	75 ug/m ³ 260 ug/m ³	
Lead	30-Day Average	1.5 ug/m ³	--	To prevent health problems.
Hydrogen Sulfide	1 hr.	0.03 ppm	--	To prevent odor.
Hydrocarbons (Corrected for Methane)	3 hr. (6-9 a.m.)	--	160 ug/m ³	To prevent oxidant build up.
Ethylene	8 hr.	0.1 ppm	--	--
	1 hr.	0.5 ppm		
Visibility Reducing	One Observation	In sufficient amount to reduce the prevailing visibility to less than 10 miles when the relative humidity is less than 70%.		To improve visibility.

^a The strictest air quality standard, whether State or Federal applies in the San Joaquin Valley Air Basin.

^b National standards, other than those based on annual averages or annual geometric means, are not to be exceeded more than once per year. National primary standards: The levels of air quality necessary, with an adequate margin of safety, to protect the public health. Each state must attain the primary standards no later than 1982. In the case of photochemical oxidants and carbon monoxide, extensions to 1987 at the latest may be granted if certain conditions set forth by the Clean Air Act of 1977 are met.

^c ppm = parts per million.

^d With simultaneous violation of State 1-hour oxidant standard or State 24-hour suspended particulate matter standard.

^e ug/m³ = micrograms per cubic meter.

TABLE 4.3.13
AIR QUALITY IN THE TRACY AREA, 1977-1980

Pollutant	1977		1978		1979		1980	
	Stockton	Union Island	Stockton	Union Island	Stockton	Union Island	Stockton	Union Island
<u>Photochemical Oxidants</u>								
- Maximum one-hour average (ppm) ^a	0.16	0.11	—	0.16	0.14	0.13	0.14	NM ^c
- Number of days standards (.12 ppm) exceeded	32.0	0.7	—	21.0	7.0	0.3	1.0	NM
<u>Carbon Monoxide</u>								
- Maximum 8-hour average (ppm)	13.1	2.0	17.0	2.0	18.0	4.0	13.1	1.3
- Number of days federal standard (9 ppm) exceeded	2.0	—	1.0	—	2.0	—	1.0	—
<u>Nitrogen Dioxide</u>								
- Maximum 1-hour average (ppm)	0.18	0.15	0.19	0.13	0.17	0.09	0.13	0.06
- Number of days state standard (.25 ppm) exceeded	—	—	—	—	—	—	—	—
<u>Total Suspended Particulates</u>								
- Annual geometric mean (ug/m ³) ^b	52.2	NM	66.8	75.9	75.0	NM	84.6	NM
- Percent of observations exceeding state standards	8.3	NM	6.6	20.0	23.6	NM	33.9	NM
- Percent of observations exceeding federal standards	—	NM	—	—	—	NM	1.8	NM

^appm = parts per million

^bug/m³ = micrograms per cubic meter

^cNM = no measurement

strong upper level, subtropical, high pressure cell centered over Northern and Central California. This high pressure system brought periods with considerable amounts of tropical moisture at upper levels, which combined to cause intense heating at the surface. The temperature in Stockton was 108°F or greater for five consecutive days and record breaking daily, monthly, and all-time high temperatures were recorded at a number of Central Valley locations. As a result of extreme surface heating and tropical influences aloft, surface winds tended to be more variable and lighter than normal over the San Joaquin County non-attainment areas.

The Union Island monitoring station recorded two days with peak ozone readings of 0.16 ppm during the August 1978 episode. Lodi had an episode of 0.14 ppm and Stockton was not monitored by the ARB. However, Salida recorded two episode days with 0.18 ppm peak and three days with 0.16 ppm ozone peaks. Oakdale, also in Stanislaus County (37 miles from Tracy) did not monitor until August 7; however, recorded two days with a 0.16 ppm peak during the last days of the episode. Modesto (30 miles from Tracy) recorded a peak ozone reading of 0.14 ppm three times during the episode.⁶¹

Air Quality Data for Carbon Monoxide. Federal standards for carbon monoxide (CO) are slightly higher than state standards. The federal standard for CO is 9 ppm for an eight-hour average, or 35 ppm for one hour. Violations of CO in San Joaquin County are infrequent and occur during periods when temperature inversions are strong. The Central Valley has frequent strong temperature inversions during the fall and early winter, and all San Joaquin CO violations have occurred during this period.⁶²

Elevated levels of CO usually occur in San Joaquin County between October and February, with the period of strongest inversions and stagnate air conditions in November and December. Typically, morning and early evening rush-hour traffic levels correspond closely to elevation of CO levels. The morning CO peak usually dissipates as the inversion weakens and/or is broken by increasing warmth from the sun. The evening peak normally persists into the later evening and CO levels decline to pre-rush-hour levels near midnight. Violations of federal CO standards in San Joaquin County are attributable to emissions generated by mobile sources during evening rush-hour traffic, which sometimes are aggravated by evening drift of CO over the urban area by illegal agricultural burning.⁶³

B. Emission Sources

Records of emission sources specific to the Tracy planning area have not been compiled, but information for the entire county is available and relevant.

⁶¹The San Joaquin Planning Department, op. cit.

⁶²Ibid.

⁶³Ibid.

The emission inventory used for the draft San Joaquin County 1982 AQMP differs substantially from the inventory used in the 1979 Air Quality Plan. This difference is due to significant improvements in accounting of emissions, which has enlarged the current inventory, and to the use of a different reporting format.

The base year for this plan's emission inventory is 1979 and nearly all emissions are calculated from that year. The inventory is summarized in Table 4.3.14 by major and source category for five primary pollutants in tons of emissions per day.

In the 1982 draft AQMP, the largest category of emissions results from emissions classified as area sources, which are categorized as other miscellaneous sources, and other mobile sources in Table 4.3.14. The mobile source emission category includes vehicle travel on public streets, roads, and highways.

Stationary sources represent emissions from categories including storage, transport, marketing of volatile organic compounds (usually meaning gasoline), industrial processes, industrial surface coatings, non-industrial surface coatings, and other solvent uses.

Emission totals for hydrocarbons are seasonally adjusted for pesticide applications but are not adjusted for agricultural burning, farm machinery, and orchard heaters. The result of the seasonal adjustment is to increase pesticide emissions by slightly over four tons/day (t/d) from 28.95 t/d to 33.00 t/d.⁶⁴

Projected San Joaquin County hydrocarbon emission levels in 1987 have been derived by use of applicable growth-accounting factors. In general, emission growth is expected to be low during the 1980's as rising fuel prices, continued capital formation problems, which relate to high levels of inflation, and market unpredictability dominate investment decisions for the average small business and residential consumer/investor.

Based on assumptions of growth projections of major industries, emissions from agriculture, other than pesticides, are not expected to change. Hydrocarbon emissions from pesticide applications are expected to decline by 1 percent annually because of increasing oil prices. Emissions from industry and manufacturing are expected to increase at a rate no greater than 1.5 percent annually. Emissions from gasoline evaporation are expected to decline at a rate of 1 percent annually, assuming 15 percent annual increases in fuel prices. Emissions from residential, recreation, and off-road sources are expected to increase at a rate of 2 percent per year. An additional 1 percent annual decline in vehicle emissions has been projected due to declining fuel use. Other emission sources are expected to be stable to 1987. In total, declining use of oil-based materials due to increasing price is conservatively estimated to account for 4.71 t/d reduction of hydrocarbons by 1987 in San Joaquin County.⁶⁵

⁶⁴Ibid.

⁶⁵Ibid.

TABLE 4.3.14
SUMMARY OF EMISSIONS, 1979 BASE YEAR EMISSIONS

DRAFT

SUMMARY OF EMISSIONS
1979 BASE YEAR EMISSIONS
(AVERAGE ANNUAL DAY - TONS/DAY)
SAN JOAQUIN COUNTY - SJV AIR BASIN

JOR CATEGORY

SOURCE CATEGORY	ROG	CO	NOX	SOX	TSP
TORAGE, TRANSPORT, MARKETING OF VOC					
BULK GASOLINE TERMINALS (TANK TRUCKS & CARS)	.70	.00	.00	.00	.00
GASOLINE AND CRUDE OIL STORAGE	.00	.00	.00	.00	.00
GASOLINE BULK PLANTS	4.11	.00	.00	.00	.00
OIL AND GAS PRODUCTION & PROCESSING	.55	.00	.00	.00	.00
SERVICE STATION LOADING	.13	.00	.00	.00	.00
SERVICE STATION VEHICLE REFUELING	2.92	.00	.00	.00	.00
SHIP AND BARGE TRANSFER	.01	.00	.00	.00	.00
OTHER STORAGE, TRANSFER, & MARKETING	.79	.00	.00	.00	.00
TOTAL STORAGE, TRANSPORT, MARKETING OF VOC	9.22	.00	.00	.00	.00
INDUSTRIAL PROCESSES					
FERMENTATION PROCESSES	.64	.00	.00	.00	.00
PETROLEUM REFINING PROCESSES	.00	.00	.00	.00	.51
PLASTIC PRODUCTS MANUFACTURE	.00	.00	.00	.00	.02
MISC. CHEMICAL MANUFACTURE	1.54	.00	.00	10.67	.13
POLYMERS & RESIN MANUFACTURE	.00	.00	.00	.00	.09
SYNTHETIC RUBBER MANUFACTURE	.19	.00	.00	.00	.04
OTHER INDUSTRIAL PROCESSES	.11	.05	.01	.00	3.34
TOTAL INDUSTRIAL PROCESSES	2.49	.05	.01	10.67	4.12
INDUSTRIAL SURFACE COATINGS					
FABRIC	.00	.00	.00	.00	.00
MISC. METAL PRODUCTS	.08	.00	.00	.00	.00
WOOD FURNITURE & WOOD PRODUCTS	.08	.00	.00	.00	.00
MARINE VESSEL	.00	.00	.00	.00	.00
OTHER INDUSTRIAL SURFACE COATINGS	.93	.00	.00	.00	.00
TOTAL INDUSTRIAL SURFACE COATINGS	1.10	.00	.00	.00	.00
NON-INDUSTRIAL SURFACE COATINGS					
ARCHITECTURAL COATINGS	4.18	.00	.00	.00	.00
AUTO REFINISHING	.10	.00	.00	.00	.00
TOTAL NON-INDUSTRIAL SURFACE COATINGS	4.28	.00	.00	.00	.00
OTHER SOLVENT USES					
CUTBACK ASPHALT	.87	.00	.00	.00	.00
DEGREASING	.83	.00	.00	.00	.00
DRY CLEANING	.41	.00	.00	.00	.00
GRAPHIC ARTS	.35	.00	.00	.00	.00

Table 4.3.15 summarizes 1987 hydrocarbon emission projections for San Joaquin County.

TABLE 4.3.15
PROJECTION OF HYDROCARBON EMISSIONS
IN SAN JOAQUIN COUNTY TO 1987 (Tons/Day)

<u>Source</u>	<u>1979 Emissions</u>	<u>8-Year Growth Rate</u>	<u>1982 Emissions</u>
Agriculture	41.98	-8% for pesticides	40.99
Off-road activities	0.31	16%	0.33
Residential/utility equipment	1.76	16%	1.87
Gasoline evaporation	8.67	-8%	8.41
Other sources	<u>17.45</u>	<u>0%</u>	<u>17.45</u>
All above sources	70.17	0%	69.05
Mobile sources	27.65	-8%	26.98
Industrial point sources	<u>3.42</u>	<u>8%</u>	<u>3.52</u>
TOTAL EMISSIONS	101.24	0%	99.5

San Joaquin County's mobile emission source inventory and projections are based on the California Department of Transportation's (Caltrans) traffic model for the county in conjunction with Caltrans' Direct Travel Impact Model (DTIM) and the Resources Board's companion impact rate program, EMFAC 6. The traffic model provides a forecast of trips in and through the county, which is used with information on specific vehicle characteristics and emission factors for DTIM to determine forecast estimates of air pollutants from on-road vehicle traffic. DTIM provides mobile source emission inventory and projection data for oxides of nitrogen, hydrocarbons, and carbon monoxide in 1979, 1982, 1987, and 1995, as shown in Table 4.3.16.

TABLE 4.3.16
SUMMARY OF MOBILE SOURCE
EMISSION INVENTORY AND PROJECTIONS^a
(Emissions in Tons/Day)

San Joaquin County

<u>Analysis Year</u>	<u>Nitrogen Oxides</u>	<u>Reactive Hydrocarbons</u>	<u>Carbon Monoxide</u>
1979	34.85	27.65	255.98
1982	35.48	22.37	264.62
1987	34.39	17.15	280.08
1995	37.83	17.75	297.09

Stockton Urban Area^b

<u>Analysis Year</u>	<u>Nitrogen Oxides</u>	<u>Reactive Hydrocarbons</u>	<u>Carbon Monoxide</u>
1979	20.53	16.29	150.77
1982	20.14	12.70	150.23
1987	19.00	9.48	154.77
1995	19.13	8.98	150.24

^aBased on 1980 DTIM/EMFAC 6c.

^bBased on a 1979 urban area population of 195,598 and continued future year proportionality to San Joaquin County population growth.

Source: Preliminary Draft: San Joaquin County 1982 Air Quality Management Plan.

DTIM accounts for increasing vehicle emission controls over time, resulting in significant reductions in hydrocarbons, as shown in Table 4.3.16, in spite of projected increases in vehicle miles traveled (vmt) in San Joaquin County. Oxide of nitrogen emissions are also expected to remain level because of reductions due to increasing vehicle emission controls. Since vehicle emission controls have only minor reduction potential for carbon monoxide, that pollutant is projected to increase as vmt increases.⁶⁶

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APPENDIX A
Authority for and Scope of General Plans

Article 5. Authority for and Scope of General Plans

Plan required	<p>65300. Each planning agency shall prepare and the legislative body of each county and city shall adopt a comprehensive, long-term general plan for the physical development of the county or city, and of any land outside its boundaries which in the planning agency's judgment bears relation to its planning.</p> <p>(Repealed and added by Stats. 1965, Ch. 1880.)</p>
Internal consistency	<p>65300.5. In construing the provisions of this article, the Legislature intends that the general plan and elements and parts thereof comprise an integrated, internally consistent and compatible statement of policies for the adopting agency.</p> <p>(Added by Stats. 1975, Ch. 1104.)</p>
Local Implementation	<p>65300.7. The Legislature finds that the diversity of the state's communities and their residents requires planning agencies and legislative bodies to implement this article in ways that accommodate local conditions and circumstances, while meeting its minimum requirements.</p> <p>(Added by Stats. 1980, Ch. 837.)</p>
Adoption	<p>65301. The general plan shall be so prepared that all or individual elements of it may be adopted by the legislative body, and so that it may be adopted by the legislative body for all or part of the territory of the county or city and such other territory outside its boundaries which in its judgment bears relation to its planning.</p> <p>(Repealed and added by Stats. 1965, Ch. 1880.)</p>
Judicial Standard of Review	<p>65301.5. The adoption of the general plan or any part or element thereof or the adoption of any amendment to such plan or any part or element thereof is a legislative act which shall be reviewable pursuant to Section 1085 of the Code of Civil Procedure.</p> <p>(Added by Stats. 1980, Ch. 837.)</p>
Nine mandated elements	<p>65302. The general plan shall consist of a statement of development policies and shall include a diagram or diagrams and text setting forth objectives, principles, standards, and plan proposals. The plan shall include the following elements:</p>

- (a) A land use element which designates the proposed general distribution and general location and extent of the uses of the land for housing, business, industry, open space, including agriculture, natural resources, recreation, and enjoyment of scenic beauty, education, public buildings and grounds, solid and liquid waste disposal facilities, and other categories of public and private uses of land. The land use element shall include a statement of the standards of population density and building intensity recommended for the various districts and other territory covered by the plan. The land use element shall also identify areas covered by the plan which are subject to flooding and shall be reviewed annually with respect to such areas.
- (b) A circulation element consisting of the general location and extent of existing and proposed major thoroughfares, transportation routes, terminals, and other local public utilities and facilities, all correlated with the land use element of the plan.
- (c) A housing element as provided in Article 10.6 (commencing with Section 65580).
- (d) A conservation element for the conservation, development, and utilization of natural resources including water and its hydraulic force, forests, soils, rivers and other waters, harbors, fisheries, wildlife, minerals, and other natural resources. That portion of the conservation element including waters shall be developed in coordination with any countywide water agency and with all district and city agencies which have developed, served, controlled or conserved water for any purpose for the county or city for which the plan is prepared. The conservation element may also cover:
- (1) The reclamation of land and waters.
 - (2) Flood control.
 - (3) Prevention and control of the pollution of streams and other waters.
 - (4) Regulation of the use of land in stream channels and other areas required for the accomplishment of the conservation plan.
 - (5) Prevention, control, and correction of the erosion of soils, beaches, and shores.
 - (6) Protection of watersheds.
 - (7) The location, quantity and quality of the rock, sand and gravel resources.
- The conservation element shall be prepared and adopted no later than December 31, 1973.
- (e) An open-space element as provided in Article 10.5 (commencing with Section 65560) of this chapter.
- (f) A seismic safety element consisting of an identification and appraisal of seismic hazards such as susceptibility to surface ruptures from faulting, to ground shaking, to ground failures, or to effects of seismically induced waves such as tsunamis and seiches.
- Land use
- Circulation
- Housing
- Conservation
- Open space
- Seismic safety

The seismic safety element shall also include an appraisal of mudslides, landslides, and slope stability as necessary geologic hazards that must be considered simultaneously with other hazards such as possible surface ruptures from faulting, ground shaking, ground failure and seismically induced waves.

To the extent that a county's seismic safety element is sufficiently detailed containing appropriate policies and programs for adoption by a city, a city may adopt that portion of the county's seismic safety element that pertains to the city planning area within the county's jurisdiction, in satisfaction of this subdivision.

In adopting a county seismic safety element, a city shall follow all requirements regarding the content and adoption of general plan elements as set forth in this article and Article 6 (commencing with Section 65350) of this chapter.

Each county and city shall submit to the Division of Mines and Geology of the Department of Conservation one copy of the seismic safety element and any technical studies used for developing the seismic safety element.

Noise

- (g) A noise element, which shall recognize guidelines adopted by the Office of Noise Control pursuant to Section 46050.1 of the Health and Safety Code, and which quantifies the community noise environment in terms of noise exposure contours for both near- and long-term levels of growth and traffic activity. Such noise exposure information shall become a guideline for use in development of the land use element to achieve noise compatible land use and also to provide baseline levels and noise source identification for local noise ordinance enforcement.

The sources of environmental noise considered in this analysis shall include, but are not limited to, the following:

- (1) Highways and freeways.
- (2) Primary arterials and major local streets.
- (3) Passenger and freight on-line railroad operations and ground rapid transit systems.
- (4) Commercial, general aviation, heliport, heli-stop, and military airport operations, aircraft overflights, jet engine test stands, and all other ground facilities and maintenance functions related to airport operation.
- (5) Local industrial plants, including, but not limited to, railroad classification yards.
- (6) Other ground stationary noise sources identified by local agencies as contributing to the community noise environment.

The noise exposure information shall be presented in terms of noise contours expressed in community noise equivalent level (CNEL) or day-night average level (L/dn). CNEL means the average equivalent

A-weighted sound level during a 24-hour day, obtained after addition of five decibels to sound levels in the evening from 7 p.m. to 10 p.m. and after addition of 10 decibels to sound levels in the night before 7 a.m. and after 10 p.m. L/dn means the average equivalent A-weighted sound level during a 24-hour day, obtained after addition of 10 decibels to sound levels in the night before 7 a.m. and after 10 p.m.

The contours shall be shown in minimum increments of 5db and shall continue down to 60db. For areas deemed noise sensitive, including, but not limited to, areas containing schools, hospitals, rest homes, long-term medical or mental care facilities, or any other land-use areas deemed noise sensitive by the local jurisdiction, the noise exposure shall be determined by monitoring.

A part of the noise element shall also include the preparation of a community noise exposure inventory, current and projected, which identifies the number of persons exposed to various levels of noise throughout the community.

The noise element shall also recommend mitigating measures and possible solutions to existing and foreseeable noise problems.

The state, local, or private agency responsible for the construction, maintenance, or operation of those transportation, industrial, or other commercial facilities specified in paragraph 2 of this subdivision shall provide to the local agency producing the general plan, specific data relating to current and projected levels of activity and a detailed methodology for the development of noise contours given this supplied data, or they shall provide noise contours as specified in the foregoing statements.

It shall be the responsibility of the local agency preparing the general plan to specify the manner in which the noise element will be integrated into the city or county's zoning plan and tied to the land use and circulation elements and to the local noise ordinance. The noise element, once adopted, shall also become the guideline for determining compliance with the state's noise insulation standards, as contained in Section 1092 of Title 25 of the California Administrative Code.

- (h) A scenic highway element for the development, establishment, and protection of scenic highways pursuant to the provisions of Article 2.5 (commencing with Section 260) of Chapter 2 of Division 1 of the Streets and Highways Code.
- (i) A safety element for the protection of the community from fires and geologic hazards including features necessary for such protection as evacuation routes, peak load water supply requirements, minimum road widths, clearances around structures,

Scenic highways

Safety

and geologic hazard mapping in areas of known geologic hazards.

The requirements of this section shall apply to charter cities.

(Amended by Stats. 1980, Ch. 1143; effective October 1, 1981)

Article 10.6. Housing Elements

Findings

65580. The Legislature finds and declares as follows:

- (a) The availability of housing is of vital statewide importance, and the early attainment of decent housing and a suitable living environment for every California family is a priority of the highest order;
- (b) The early attainment of this goal requires the cooperative participation of government and the private sector in an effort to expand housing opportunities and accommodate the housing needs of Californians of all economic levels.
- (c) The provision of housing affordable to low- and moderate-income households requires the cooperation of all levels of government.
- (d) Local and state governments have a responsibility to use the powers vested in them to facilitate the improvement and development of housing to make adequate provision for the housing needs of all economic segments of the community.
- (e) The Legislature recognizes that in carrying out this responsibility, each local government also has the responsibility to consider economic, environmental, and fiscal factors and community goals set forth in the general plan and to cooperate with other local governments and the state in addressing regional housing needs.

(Added by Stats. 1980, Ch. 1143.)

Intent

65581. It is the intent of the Legislature in enacting this article:

- (a) To assure that counties and cities recognize their responsibilities in contributing to the attainment of the state housing goal.
- (b) To assure that counties and cities will prepare and implement housing elements which, along with federal and state programs, will move toward attainment of the state housing goal.
- (c) To recognize that each locality is best capable of determining what efforts are required by it to contribute to the attainment of the state housing goal, provided such a determination is compatible with the state housing goal and regional housing needs.
- (d) To ensure that each local government cooperates with other local governments in order to address regional housing needs.

(Added by Stats. 1980, Ch. 1143.)

Definitions

65582.

As used in this article:

- (a) "Community," "locality," "local government," or "jurisdiction" means a city, city and county, or county.
- (b) "Department" means the Department of Housing and Community Development.
- (c) "Housing element" or "element" means the housing element of the community's general plan, as required pursuant to this article and subdivision (c) of Section 65302.

(Added by Stats. 1980, Ch. 1143.)

Housing Element
Content

65583. The housing element shall consist of an identification and analysis of existing and projected housing needs and a statement of goals, policies, quantified objectives, and scheduled programs for the preservation, improvement, and development of housing. The housing element shall identify adequate sites for housing, including rental housing, factory-built housing, and mobilehomes, and shall make adequate provision for the existing and projected needs of all economic segments of the community. The element shall contain all of the following:

Needs Assessment

- (a) An assessment of housing needs and an inventory of resources and constraints relevant to the meeting of these needs. The assessment and inventory shall include the following:
 - (1) Analysis of population and employment trends and documentation of projections and a quantification of the locality's existing and projected housing needs for all income levels. Such existing and projected needs shall include the locality's share of the regional housing need in accordance with Section 65584.
 - (2) Analysis and documentation of household characteristics, including level of payment compared to ability to pay, housing characteristics, including overcrowding, and housing stock condition.
 - (3) An inventory of land suitable for residential development, including vacant sites and sites having potential for redevelopment, and an analysis of the relationship of zoning and public facilities and services to these sites.
 - (4) Analysis of potential and actual governmental constraints upon the maintenance, improvement, or development of housing for all income levels, including land use controls, building codes and their enforcement, site improvements, fees and other exactions required of developers, and local processing and permit procedures.
 - (5) Analysis of potential and actual nongovernmental constraints upon the maintenance, improvement, or development of housing for all income levels, including the availability of financing, the price of land, and the cost of construction.
 - (6) Analysis of any special housing needs, such as those of the handicapped, elderly, large families, farmworkers, and families with female heads of households.
 - (7) Analysis of opportunities for energy conservation with respect to residential development.

- (b) A statement of the community's goals, quantified objectives, and policies relative to the maintenance, improvement, and development of housing.

Goals, objectives
and policies

It is recognized that the total housing needs identified pursuant to subdivision (a) may exceed available resources and the community's ability to satisfy this need within the content of the general plan requirements outlined in Article 5 (commencing with Section 65300). Under these circumstances, the quantified objectives need not be identical to the identified existing housing needs, but should establish the maximum number of housing units that can be constructed, rehabilitated, and conserved over a five-year time frame.

- (c) A program which sets forth a five-year schedule of actions the local government is undertaking or intends to undertake to implement the policies and achieve the goals and objectives of the housing element through the administration of land use and development controls, provision of regulatory concessions and incentives, and the utilization of appropriate federal and state financing and subsidy programs when available. In order to make adequate provision for the housing needs of all economic segments of the community, the program shall do all of the following:

Implementation
program

- (1) Identify adequate sites which will be made available through appropriate zoning and development standards and with public services and facilities needed to facilitate and encourage the development of a variety of types of housing for all income levels, including rental housing, factory-built housing and mobile-homes, in order to meet the community's housing goals as identified in subdivision (b).
- (2) Assist in the development of adequate housing to meet the needs of low- and moderate-income households.
- (3) Address and, where appropriate and legally possible, remove governmental constraints to the maintenance, improvement, and development of housing.
- (4) Conserve and improve the condition of the existing affordable housing stock.
- (5) Promote housing opportunities for all persons regardless of race, religion, sex, marital status, ancestry, national origin, or color.

The program shall include an identification of the agencies and officials responsible for the implementation of the various actions and the means by which consistency will be achieved with other general plan elements and community goals. The local government shall make a diligent effort to achieve public participa-

tion of all economic segments of the community in the development of the housing element, and the program shall describe this effort.
(Added by Stats. 1980, Ch. 1143.)

Regional housing
needs

65584. (a) For purposes of subdivision (a) of Section 65583, a locality's share of the regional housing needs includes that share of the housing need of persons at all income levels within the area significantly affected by a jurisdiction's general plan. The distribution of regional housing needs shall, based upon available data, take into consideration market demand for housing, employment opportunities, the availability of suitable sites and public facilities, commuting patterns, type and tenure of housing need, and the housing needs of farmworkers. The distribution shall seek to avoid further impactation of localities with relatively high proportions of lower income households. Based upon data provided by the Department of Housing and Community Development relative to the statewide need for housing, each council of governments shall determine the existing and projected housing need for its region. The Department of Housing and Community Development shall ensure that this determination is consistent with the statewide housing need and may revise the determination of the council of governments if necessary to obtain this consistency. Each locality's share shall be determined by the appropriate council of governments consistent with the criteria above with the advice of the department subject to the procedure established pursuant to subdivision (c).

(b) For areas with no council of governments, the Department of Housing and Community Development shall determine housing market areas and define the regional housing need for localities within these areas. Where the department determines that a local government possesses the capability and resources and has agreed to accept the responsibility, with respect to its jurisdiction, for the identification and determination of housing market areas and regional housing needs, the department shall delegate this responsibility to the local governments within these areas.

(c) Within 90 days following a determination of a council of governments pursuant to subdivision (a), or the department's determination pursuant to subdivision (b), a local government may revise the definition of its share of the regional housing need. The revised share shall be based upon available data and accepted planning methodology, and supported by adequate documentation. Within 60 days of the local government's revision, the council of governments or the department, as the case may be, shall accept the revision or shall indicate, based upon available data and accepted planning methodology, why the revision is inconsistent with the regional housing need. The housing element shall contain an analysis of the factors and circumstances, with all supporting data, justifying the revision. All materials and data used to justify any revision shall be made available upon request by any interested party within 45 days upon payment of reasonable costs of reproduction unless such costs are waived due to economic hardship.

(d) Any authority to review and revise a local government's share of the regional housing need granted under this section shall not constitute authority to revise, approve, or disapprove the manner in which the local government's share of the regional housing need is implemented through its housing program.

(Added by Stats. 1980, Ch. 1143.)

65585. (a) Each city, county, and city and county shall consider the guidelines adopted by the Department of Housing and Community Development pursuant to Section 50459 of the Health and Safety Code in preparation and amendment of the housing element pursuant to this article. Such guidelines shall be advisory to each local government in order to assist it in the preparation of its housing element.

Housing element
guidelines

(b) At least 90 days prior to adoption of the housing element pursuant to this article and Section 65357, or at least 45 days prior to the adoption of an amendment to this element, the planning agency of a city, county, or city and county shall submit a draft of the element or amendment to the Department of Housing and Community Development. The department shall review drafts submitted to it and report its findings to the planning agency within 90 days of receipt of the draft in the case of adoption of the housing element pursuant to this article, or within 45 days of receipt of the draft in the case of an amendment. The legislative body shall consider the department's findings prior to final adoption of the housing element or amendment.

State review

(c) Each local government shall provide the department with a copy of its adopted housing element or amendments. The department may review adopted housing elements or amendments and report its findings.

Copy

(d) Except as provided in Section 65586, any and all findings made by the Department of Housing and Community Development pursuant to subdivisions (b) and (c) shall be advisory to the local government.

State findings

(Added by Stats. 1980, Ch. 1143.)

65586. Local governments shall conform their housing elements to the provisions of this article on or before October 1, 1981. Jurisdictions with housing elements adopted before October 1, 1981, in conformity with the housing element guidelines adopted by the Department of Housing and Community Development on December 7, 1977, and located in Subchapter 3 (commencing with Section 6300) of Chapter 6 of Part 1 of Title 25 of the California Administrative Code, shall be deemed in compliance with this article as of its effective date. A locality with a housing element found to be adequate by the department before October 1, 1981, shall be deemed in conformity with these guidelines.

Deadline for
adoption

(Added by Stats. 1980, Ch. 1143.)

65587. (a) Each city, county, or city and county shall bring its housing element, as required by subdivision (c) of Section 65302, into conformity with the requirements of this article on or before October 1, 1981. No extension of time for such purpose may be granted pursuant to Section 65302.6, notwithstanding its provisions to the contrary.

(b) Any action brought by an interested party to review the conformity with the provisions of this article of any housing element or portion thereof or revision thereto shall be brought pursuant to Section 1085 of the Code of Civil Procedure; the court's review of compliance with the provisions of this article shall extend to whether the housing element or portion thereof or revision thereto reasonably complies with the requirements of this article.

Judicial standard
of review

(Added by Stats. 1980, Ch. 1143.)

Periodic revision

65588. (a) Each local government shall review its housing element as frequently as appropriate to evaluate all of the following:

- (1) The appropriateness of the housing goals, objectives, and policies in contributing to the attainment of the state housing goal.
- (2) The effectiveness of the housing element in attainment of the community's housing goals and objectives.
- (3) The progress of the city, county, or city and county in implementation of the housing element.

(b) The housing element shall be revised as appropriate, but not less than every five years, to reflect the results of this periodic review, except that the first such revision shall be accomplished by July 1, 1984.

(Added by Stats. 1980, Ch. 1143.)

Legal effect

65589. (a) Nothing in this article shall require a city, county, or city and county to do any of the following:

- (1) Expend local revenues for the construction of housing, housing subsidies, or land acquisition.
- (2) Disapprove any residential development which is consistent with the general plan.

(b) Nothing in this article shall be construed to be a grant of authority or a repeal of any authority which may exist of a local government to impose rent controls or restrictions on the sale of real property.

(c) Nothing in this article shall be construed to be a grant of authority or a repeal of any authority which may exist of a local government with respect to measures that may be undertaken or required by a local government to be undertaken to implement the housing element of the local general plan.

(d) The provisions of this article shall be construed consistent with, and in promotion of, the statewide goal of a sufficient supply of decent housing to meet the needs of all Californians.

(Added by Stats. 1980, Ch. 1143.)

TABLE 4.3.2
SEISMIC TABLE REFERENCED TO STOCKTON

Source of Earthquake	Distance (Miles) (Calaveras Fault)	Maximum Credible Earthquake Magnitude Occurring at Epicenter	Predominant Period of Rock* Acceleration (ground surface acceleration will differ upon subsurface ground conditions)	Duration of Strong Shaking	Estimated Recurrence of Maximum Credible Event	Fault Activity Rating	Maximum Credible Earthquake Intensity Which Could Occur in Stockton (MM Scale)
Calaveras Fault	13	7.5	.13	37 seconds	Unknown	1,2,3	VIII or IX
Midland Fault	13	7.0	.13	30 seconds	Unknown	5	VIII or IX
Tracy-Stockton Fault	10 city	5.0 +	.11	30 seconds	Unknown	6	IX
Hayward Fault	11	7.5	.11	24 seconds	Unknown	1,2,3	VIII or IX
San Andreas Fault	45	8.3	.11	24 seconds	102 years	1	VIII or IX
Green Valley Fault	11	7.0	.07	-18 seconds	Unknown	4	VIII or IX

*Rock: Any material with a shear wave greater than 2,000 feet/second.

Fault Activity Ratings:

1-4: Strong evidence of a relatively high degree of activity

1: Surface rupture during a historic earthquake

2: Presently occurring creep

3: Alignment of earthquake epicenters

4: Recent geologic surface displacement but no historic records

5: Possible source of a major historic earthquake

6: Possible source of small historic earthquakes

Sources: Greensfelder, R., 1971. "Minimum Credible Rock Acceleration from Earthquakes in California: Division of Mines and Geology, Sacramento.

Wallace, R.E., 1970. "Geological Society of America Bulletin": U.S. Geological Survey, v. 81, p. 2875.

Derived from COG Seismic Safety Element.

that the zone has sustained activity during the Quaternary period. This could be a very important fault system for San Joaquin County. The location of the Greenville Fault is between the Patterson Pass Fault and the Green Valley Fault, and has been active in 1980. Both faults are being studied by the U.S. Geological Survey and should be precisely mapped by late 1982.

Tracy-Stockton Fault. The Tracy-Stockton Fault crosses the county from the southwest near Tracy to the northeast near Linden. It passes directly beneath Stockton. Its position is known only from oil well log data, since no surface trace of this fault has been mapped. Subsurface data indicate that no appreciable movement has occurred on the Tracy-Stockton Fault for five million years or more. Ordinarily, such evidence would lead to the conclusion that the fault is inactive and, therefore, does not pose an earthquake threat. There is, however, evidence of activity near the easternmost subsurface positions of the fault. On April 10, 1881, an earthquake occurred east of Stockton near Linden having an estimated Modified Mercalli Scale intensity of VII. Although direct correlations between intensity and magnitude are not precise, this earthquake was approximately Richter Scale magnitude 5. Two other smaller earthquakes (Richter Scale magnitude 4) occurred on September 19 and 20, 1940, approximately five miles south of Linden. The latter epicenter was instrumentally located, but only in a "rough" manner. It is therefore not certain whether or not these epicenters lie along a northeast extension of the Tracy-Stockton Fault. There is, however, the possibility of an active fault capable of at least a 5.0 magnitude earthquake located in or near the central part of San Joaquin County.

Patterson Pass Fault. The Patterson Pass Fault runs northwest from the Alameda-San Joaquin County boundary toward Livermore. Its location is imprecise and the nature of movement, if any, is uncertain. The fault is cited here because of one well-located epicenter generating a 4.5 magnitude earthquake in 1946. It seems unlikely that this small fault presents a significant seismic threat to San Joaquin County in comparison with other fault systems.

Small Buried Fault. Two small buried faults have been located by aerial photo analysis in the western portion of the county. The northern one is located on Roberts Island, and the more southern fault extends from near Banta to the county line. The latter appears to be buried beneath young sediments. Associated landforms suggest geologically recent activity, although this fault has not been historically active. Additional field investigation of this fault is warranted.

Melones-Bear Mountain Fault Zones. The Melones and Bear Mountain fault zones extend in a wide band along the western edge of the Sierra Nevada Mountains in the higher elevation foothills. Beginning near the southwest corner of Yosemite National Park, the fault zones run through Mother Lode communities, ending in the foothills east of Red Bluff.

The Melones and Bear Mountain fault zones have exhibited little seismic activity and have been considered to be inactive, since no evidence has been found of Quaternary fault movement. The U.S. Geological Survey has been monitoring activity along the two fault zones in the vicinity of New Melones Dam since 1972 and have found a lack of even microseismic activity.

Because of the location of Tulloch, New Melones, New Hogan, Jackson Creek, and Pine Flat reservoirs within the Melones and Bear Mountain fault zones, the question of the activity of these faults is extremely serious for San Joaquin County. Failure of a dam at any one of the reservoirs could cause flooding in the county. Failure of the proposed New Melones Dam or the San Luis Dam could cause flooding in the Larch-Clover portion of the Tracy planning area. (See Section 4.3.2 of the Technical Supplement.)

On August 1, 1975, a 5.7 magnitude earthquake took place near Oroville. The Oroville earthquake is important because it took place in an area where a quake of such magnitude was not expected and because it occurred in the Sierra Nevada foothills. "Many geologists and seismologists feel that this earthquake is a fair warning that earthquakes of magnitude 6 can occur anywhere in California and at any time. . . ." ⁵¹

James E. Slosson, formerly State Geologist, now a State Seismic Safety Commissioner, concluded that "the Oroville earthquake should be interpreted as related to the tectonics or crustal strain pattern for this region. . . . The Oroville earthquake suggests that this event is indicative of future earthquakes within the fault zones of the Western Sierra Nevada foothills. If this hypothesis is reasonable, earthquakes of at least magnitude 6 should be anticipated. . . ." The report goes on to state: "the fault zones of the Western Sierra Nevada foothills extending from Bakersfield to Chico should be reanalyzed with consideration given to the 1940 and 1975 earthquakes in Butte County, the alignments of faults associated with topographic features of terrain and current 'state of the art' in both seismology and geology. ⁵² "Since upstream dam failure could lead to massive flooding in San Joaquin County, it is extremely important to the county that the Melones and Bear Mountain fault zones be reanalyzed.

Tesla and Black Butte Faults. Neither of these faults, located in the southwest corner of San Joaquin County, have any recorded evidence of activity.

Other Faults. Earthquakes along faults in the Owens Valley, Kern County (White Wolf Fault), near Oroville, and in Nevada have been felt in San Joaquin County. However, because of the distance of these faults, they do not pose a significant seismic hazard to the county.

Earthquake History in San Joaquin County

Within the last 150 years, the San Joaquin County area has experienced several earthquakes of intensity V or greater on the Modified Mercalli Scale. Table 4.3.3 lists these earthquakes.

⁵⁰California State Division of Mines and Geology, 1975. Oroville, California, Earthquake, 1 August 1975, Special Report 124.

⁵¹Ibid.

TABLE 4.3.3
EARTHQUAKES IN SAN JOAQUIN COUNTY
(OF INTENSITY V OR GREATER)

<u>Date</u>	<u>MM Intensity in SJ County</u>	<u>MM Intensity Near Epicenter</u>	<u>Epicenter</u>	<u>Richter Magnitude at Epicenter</u>
1836	V-VI	IX-X	Hayward	7+
1838	VI	X	S.F. Peninsula	7+
1857	VI	X-XI	Mountains Between Santa Barbara & Bakersfield	7+
1868	V-VI	IX-X	Hayward	7+
1872	VI	X	Owens Valley	8+
1881	V-VI (?)	VII	Linden	5+
1892	IV-V	VIII	Vacaville	approx. 7.0
1906	VI-VII	XI	San Francisco	8.3
1940	?	?	Southeast of Linden	4.0
1946	?	?	Patterson Pass	4.5
1952	V	VIII	Bakersfield	approx. 7.7
1966	IV-V	VII	North of Tahoe	approx. 6.5

The isoseismal map on the following page (Figure 4.3.4) shows lines of equal earthquake intensity plotted for three of the above earthquakes.

Future Seismicity in San Joaquin County

Initial Effect: Groundshaking. Strong groundshaking poses a greater seismic threat than the possibility of a local ground rupture. The most likely sources of strong groundshaking are the San Andreas, Hayward, Calaveras, Midland, Green Valley-Concord, and Tracy-Stockton faults. The intensity of groundshaking from an earthquake on these and other faults is dependent on the earthquake's magnitude, distance, and soil and rock properties. With these factors in mind, it is not unreasonable to expect groundshaking equivalent to an intensity of VIII or IX on the Modified Mercalli Scale. Insufficient data exist on the dynamic properties of subsurface soils in San Joaquin County to precisely define the characteristics of the "maximum probable" earthquake at ground surface. However, some general observations can be made:

- a. The depth of soil overlying "rock-like" material varies within the county from depths of less than 100 feet up to 1,000-2,000 feet.
- b. In general, deep deposits of soft soils tend to produce ground motions that have a greater effect on tall structures and less effects on short rigid structures.
- c. Shallow deposits of still soil tend to produce ground motions having maximum effects on low rigid structures and less effects on tall buildings.

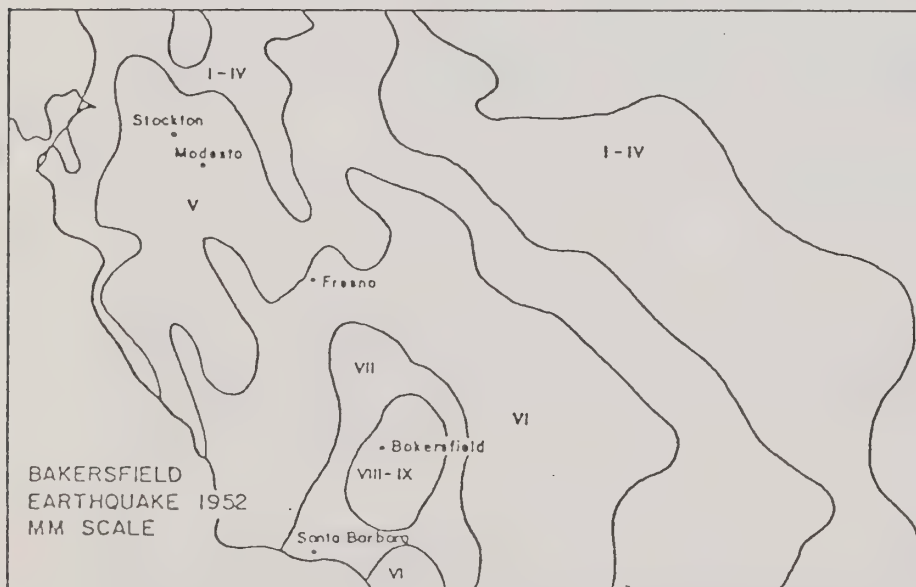
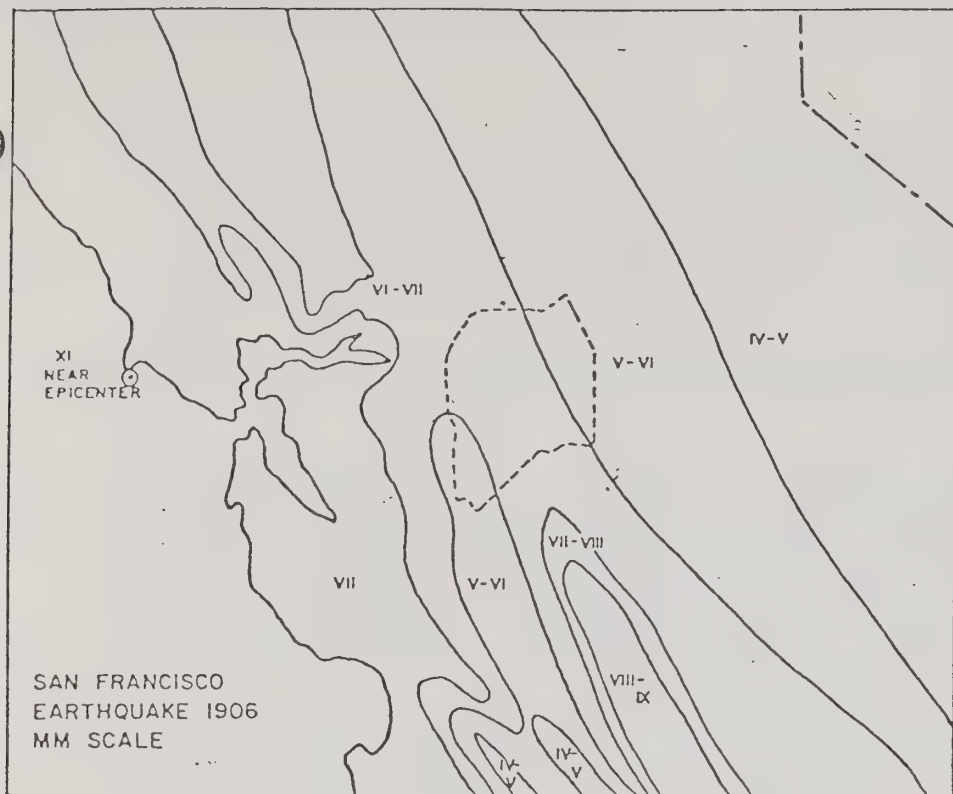


Figure 4.3.4
ISOSEISMAL MAPS

Source:
San Joaquin County Planning Department

- d. Therefore, the ground motion expected in Tracy and much of San Joaquin County where soil depths are greatest would tend to have its greatest effect on taller structures (over three to four stories high). Ground motions that would have greater effects on low structures would be more likely in the foothills of the southwest and eastern areas of the county.

Since ground surface faulting or displacement of the Tracy-Stockton Fault or others in the county is considered unlikely, the need for setback requirements of structures along the bases of the faults is not foreseen.

Secondary Effects. In addition to local ground rupture and general groundshaking, an earthquake can trigger many other actions. These secondary effects can cause as much, or more, damage as the earthquake itself. Secondary effects may include: liquefaction, tsunamis, seiches, landslides, subsidence, floods, and a possible cumulative effect of crippling emergency responses. Secondary effects are not considered to be potential problems in the Tracy planning area. Flooding is discussed in Section 4.3.2 of the Technical Supplement; emergency preparedness in Section 4.3.6.

Expansive Soils. Expansive soils are soils that swell when they absorb water and shrink as they dry. Clay soils are primarily affected. The basic cause of expansion is the attraction and absorption of water in the exandable crystal structures of clays. When buildings are placed on expansive soils, foundations rise during wet periods and fall during dry periods. Different parts of a building may rise and fall at varying rates to cause foundation cracking. Various structural portions of a building may become distorted so that doors and windows do not function properly.

The areas north and west of Tracy are areas with high shrink-swell soil problems; the remainder of the Tracy General Plan area has moderate soil expansion problems (see Figure 4.3.5).

Hazards of expansive soils can be avoided through proper drainage and foundation design, if soil characteristics are recognized through appropriate tests. The State Subdivision Map Act requires soil reports for all major subdivisions. Once expansive soils have been recognized, corrective measures can be designed into the foundation for little extra cost.

Structural Damage and Preventive Measures

Seismic activity poses the greatest geologic hazard to buildings in the county. Fortunately, seismic understanding has increased greatly in recent years, and since the impetus exerted by the 1971 San Fernando Valley earthquake, many changes have been made in structural standards and in determinations of seismic risk.

The Uniform Building Code now places all of San Joaquin County in Earthquake Zone 3. The regulations for this zone are based on the assumption that an earthquake of an intensity of VIII+ on the Mercalli Scale could occur.

Earthquake-resistant design and construction of new man-made structures is by far the most effective and practical approach to the problem of preventing or reducing loss of life, injury, and property damage, and disruption of the economy caused by earthquakes. However, there is also general agreement among seismic safety

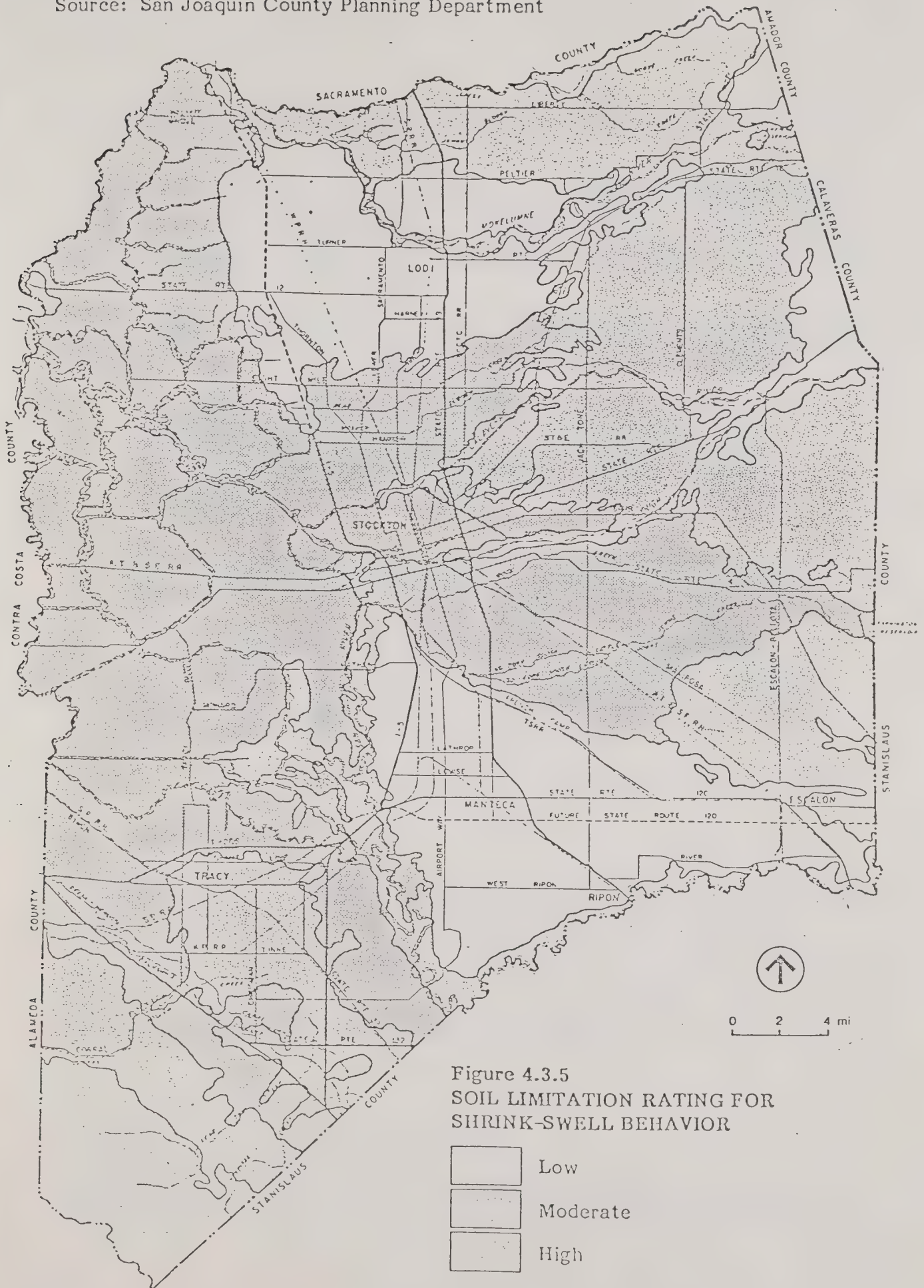
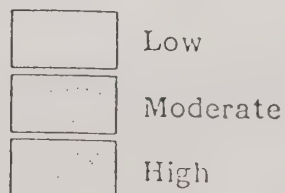


Figure 4.3.5
SOIL LIMITATION RATING FOR
SHRINK-SWELL BEHAVIOR



experts that an urgent need exists for measures to minimize the serious earthquake hazards that exist in many older buildings.

There are old buildings in Tracy that are still in use which were designed without calculated earthquake resistance. Most of these were built prior to 1933. Those constructed since that time have various degrees of earthquake resistance built into them. In the 1952 Bakersfield quake, post-1933 structures held up fairly well, while pre-1933 buildings were badly damaged.

In an earthquake, the most hazardous parts of a building generally are unreinforced masonry units. The following excerpt from the Contra Costa County Seismic Safety Element explains how such building parts have fared in previous earthquakes.

"Parapets and Chimneys. Probably the greatest loss of life from earthquakes has resulted from the failure of unreinforced unit masonry, particularly unreinforced brick parapets on commercial buildings. Persons on the streets or inside buildings are often injured by such falling masonry. Chimneys can also be a great hazard in houses and small apartments.

"Signs and Appendages. Signs, marquees, cornices, canopies, and general ornamentation extending out from buildings pose a great potential hazard in earthquakes if not adequately anchored to the building.

"Facades. Two kinds of hazards can be caused by building facades. Masonry veneer facades, inadequately anchored, can be shaken loose by an earthquake, causing danger similar to parapets. On the other hand, open glass facades, as on stores, can cause amplified twisting to the building and shattering of glass on the sidewalk."

Table 4.3.4 presents a comparison of hazards in non-earthquake resistive buildings.

Earthquake Preparedness

There are many things a citizen or a community can do to prepare for an earthquake in order to diminish the effects of an earthquake. Unlike most other natural disasters, such as floods or fire, earthquakes give no warning. It is, therefore, imperative that an individual have a basic understanding of the recommended actions to take prior to, during, and after an earthquake.

Table 4.3.5, originally published by the California Division of Mines and Geology, is a list of what to do before, during, and after an earthquake.

4.3.2 Flood Hazards

(See the Plan Policies Report, Policy Area 30.)

Flood hazards in the Tracy planning area consist of localized drainage problems and potential inundation from dam failure. Both hazards are limited to the northern portion of the planning area.

TABLE 4.3.4
HAZARD COMPARISON OF NON-EARTHQUAKE RESISTIVE BUILDINGS

Safest	Simplified Description of Structural Type
	Small wood-frame structures, i.e., dwellings not over 3,000 sq. ft. and not over 3 stories
	Single or multistory steel-frame buildings with concrete exterior walls, concrete floors, and concrete roof. Moderate wall openings
	Single or multistory reinforced-concrete buildings with concrete exterior walls, concrete walls, and concrete roof. Moderate wall openings
	Large area wood-frame buildings and other wood frame buildings
	Single or multistory steel frame buildings with reinforced masonry exterior wall panels; concrete floors and concrete roof
	Single or multistory reinforced-concrete frame buildings with unreinforced masonry exterior wall panels, concrete floors and concrete roof
	Reinforced concrete bearing walls with supported floors and roof of any material (usually wood)
	Buildings with unreinforced brick masonry having sand-lime mortar, and with supported floors and roof of any material (usually wood)
	Bearing walls of unreinforced adobe, unreinforced hollow concrete block, or unreinforced hollow clay tile
Most Dangerous	

(Table intended for buildings not containing earthquake bracings, and in general, is applicable to most older construction. Unfavorable foundation conditions and/or dangerous roof tanks can increase the earthquake hazard greatly.)

TABLE 4.3.5
EARTHQUAKE SAFETY TIPS

BEFORE

1. Store emergency supplies: food, water, first aid kit, flashlight, and battery-powered radio.
2. Take a practical first aid course.
3. Locate main switches and valves that control the flow of water, gas, and electricity into your house. Know how to operate them.
4. Support community programs that inform the public and emergency personnel about earthquake preparedness.
5. Take action to help strengthen or eliminate structures that are not earthquake-resistant.
6. Support "parapet ordinances" that would remove dangerous, unreinforced overhangs and cornices from buildings.
7. Support building codes that require earthquake-resistant construction and careful foundation preparation and grading.
8. Support land use policies that recognize and allow for the potential dangers of active fault zones.
9. Heavy furniture above the fifth floor in tall buildings should be bolted to the floor.
10. Require guard rails across the inside of plate glass windows that extend to the floor.
11. Support basic research into the cause and mechanism of earthquakes and fault movement.

DURING

1. Do not panic even if you are frightened.
2. If you are indoors, stay there. Get under a desk, table, or doorway.
3. Do not rush outside. Falling debris has caused many deaths.
4. Watch for falling plaster, bricks, and other objects.
5. If you are outside, move away from buildings and power lines; stay in the open.
6. If you are in a moving car, stop as soon as it is safe. Remain in the car.

AFTER

1. Check your family, or the people near you, for injuries.
2. Inspect your utilities for damage to water, gas, or electrical conduits. If they are damaged, turn them off.
3. Extinguish open flames.
4. Do not use the telephone except to report an emergency.
5. Turn on your battery-powered radio for emergency information.
6. Do not go sightseeing.
7. Stay away from damaged structures; aftershocks can cause the collapse of weakened structures.
8. Stay away from beaches and waterfront areas subject to seismic sea waves (commonly called "tidal waves").

Source: "California Geology," 1971: (November).

Localized Drainage Hazards

Some areas of the planning area are covered with heavy clay soils or are subject to hardpan layers near the surface. These areas may also be level and developed without drainage provisions. During heavy rainfall, water in low-lying level areas where surface drainage is poor or impaired can pond to a depth of from one to three feet.

Damage to crops and other property often occurs, particularly in a wet year in which water may stand on the ground for weeks at a time. Hazards to life from standing water are low. These are health hazards, and standing water could lead to well contamination and septic tank failure.

Older small wells not affected by recent Health District regulations may be in "pits" or be without pedestals, facilitating contamination. Standing water saturates the soil and will soak each field, causing surface and lateral movement of ineffectively treated waste. Standing water can also cause damage to or hazard from electrical circuits, telephone lines, roads, and structural foundations.

Localized Drainage Hazard Mitigation. There are existing county ordinances that regulate drainage. Major characteristics of these ordinances are:

1. Natural and approved man-made drainage channels are protected.
2. Commercial and industrial development must provide for storm drainage and on-site retention.
3. Subdivisions must provide adequate drainage for streets and parcels.
4. Public road drainage is protected.

In rural areas, storm drainage varies greatly due to the soils, the agricultural earth movement which has occurred, the topographical contours, and the sophistication of property owners in integrating drainage requirements into project site plans. In a heavy rainfall year, many homes and other structures in rural areas are flooded due to inadequate elevation of the foundation or poor on-site location. Additional regulation of foundation height and/or site location of structures will partly mitigate localized drainage problems.

Dam Failure Flood Hazard

Few threats to health and safety assume to massive proportions envisioned with a dam failure. The thought of a 50-foot wall of water traveling at devastating speed adopts nightmarish proportions. Despite the number of dams near San Joaquin County, the risk of dam failure inundating portions of San Joaquin County is considered very low, though the degree and nature of risk for each dam is unknown. A dam failure can occur under three general conditions: as the result of an earthquake, as an isolated incident due to structural instability, or in time of heavy rain in excess of design capacity.

The portion of the Tracy planning area north of the I-205 freeway would likely be inundated by a failure of either the San Luis Dam or the proposed New Melones Dam, as is shown in Figures 4.3.6 and 4.3.7.

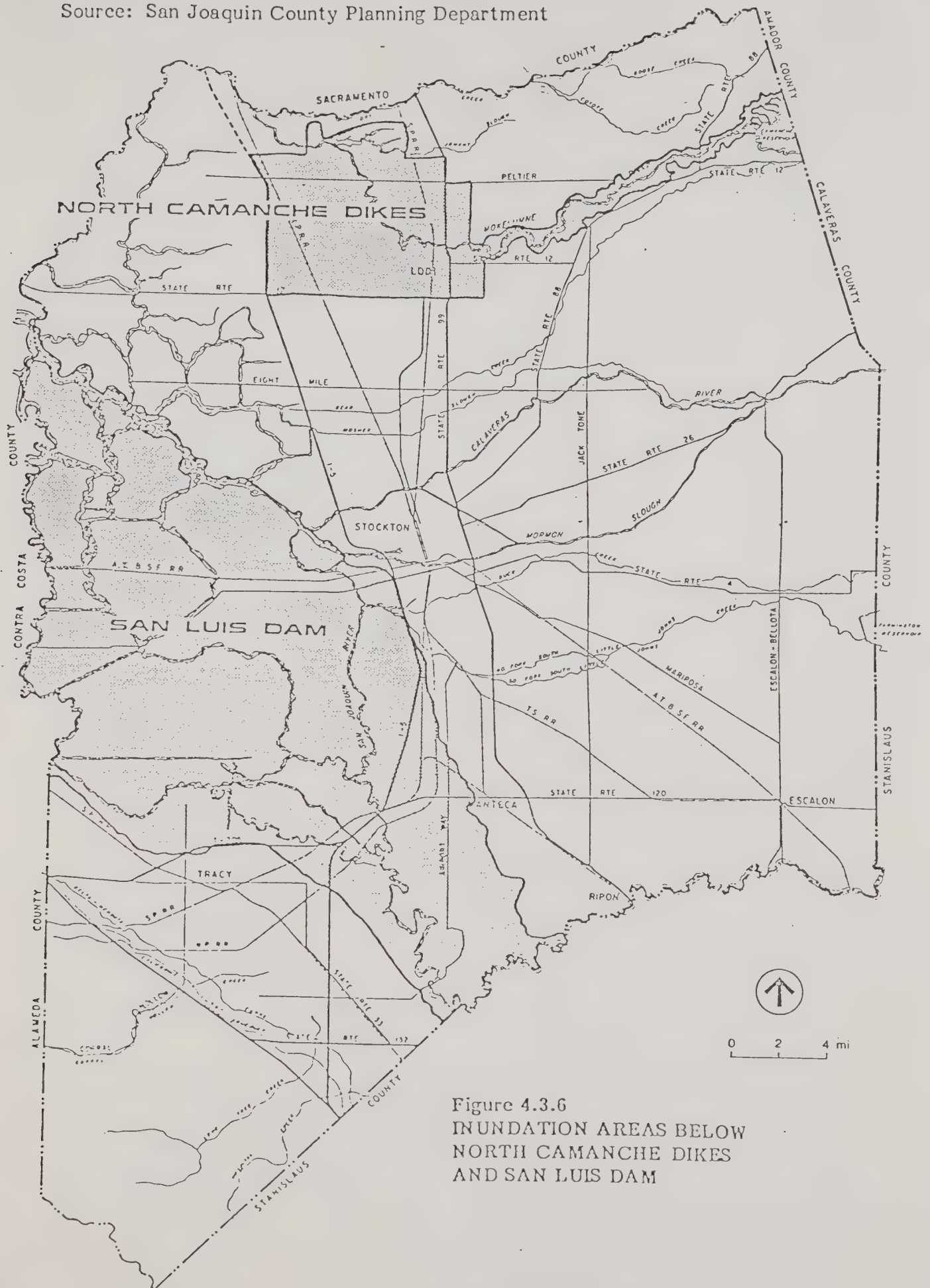


Figure 4.3.6
INUNDATION AREAS BELOW
NORTH CAMANCHE DIKES
AND SAN LUIS DAM

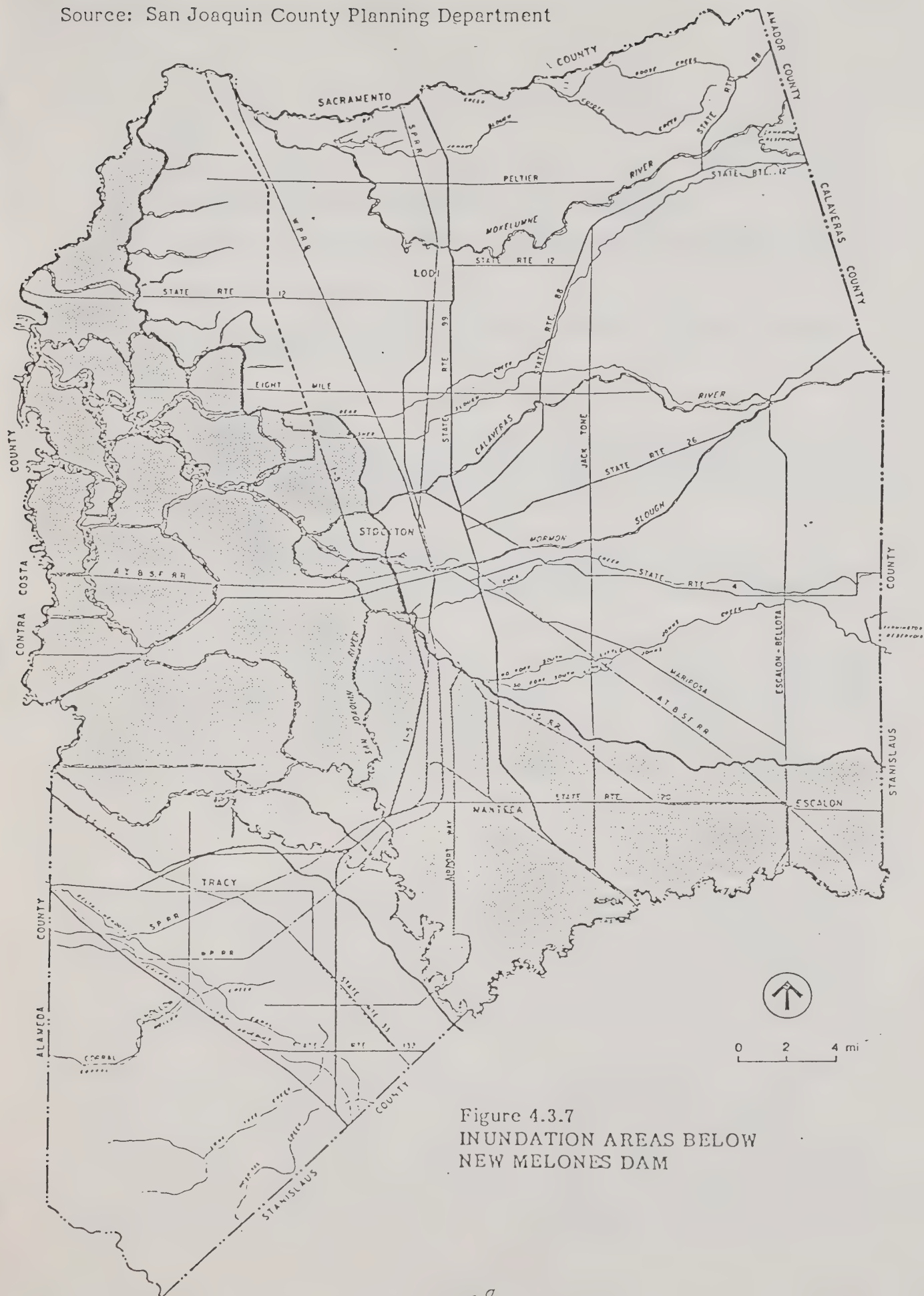


Figure 4.3.7
INUNDATION AREAS BELOW
NEW MELONES DAM

7. Aid in the examination of pest control operators and agricultural pest control advisors.
8. Inspection of equipment, pest control operator or grower application methods, materials, proper storage, and effectiveness of treatments.
9. Collection, preparation, and submission of specimens for laboratory analysis.
10. Investigation of complaints.
11. Collection, preparation, and presentation of evidence at hearings and prosecutions and conducting hearings.
12. Preparation and promulgation of county regulations.

The use of pesticides to protect crops of major economic importance is fundamental in today's agriculture. These materials enable growers to produce crops, livestock, and livestock products of good quality at minimal costs, thus providing the consuming public a supply of such products at reasonable prices.

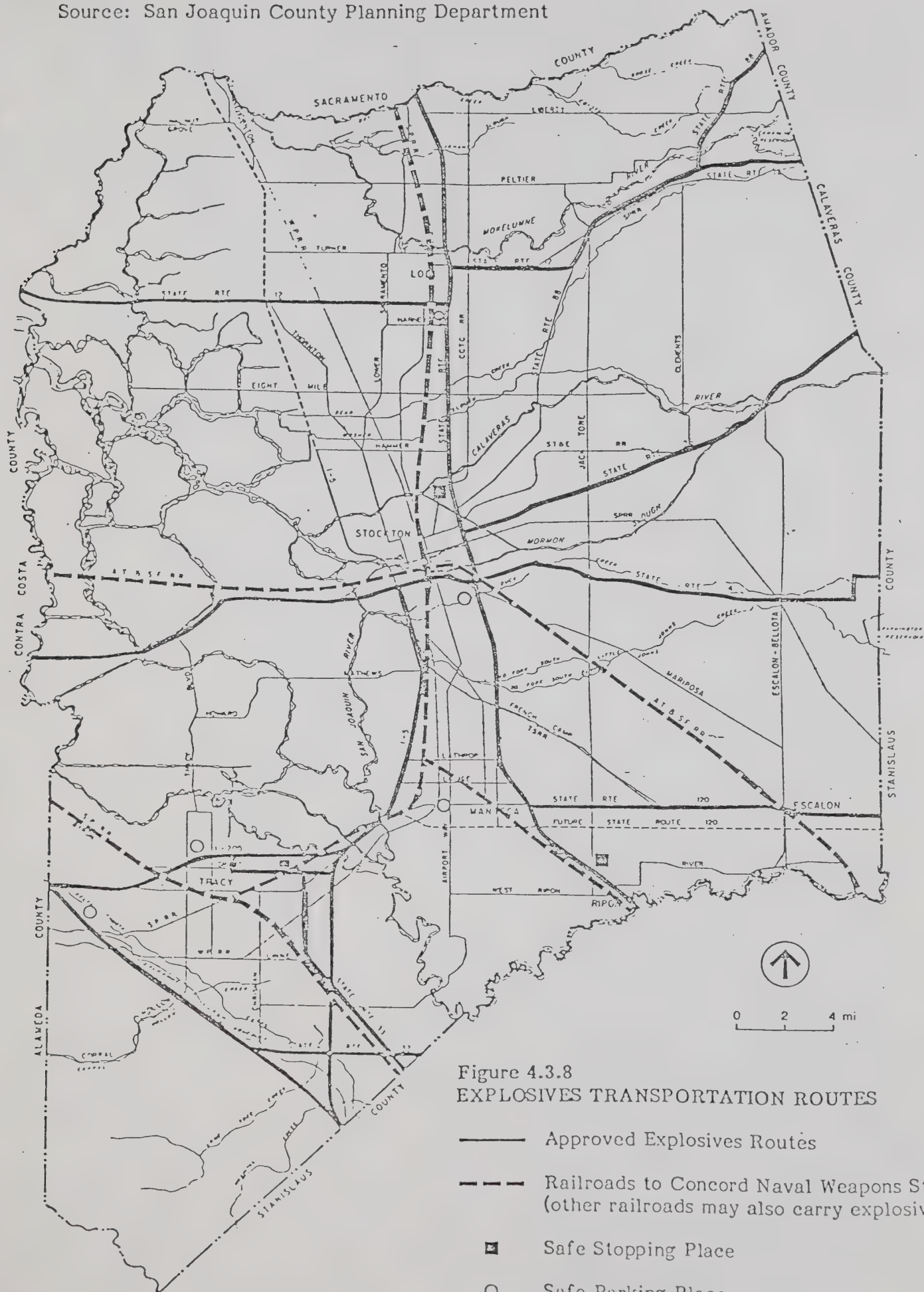
In recent years, there has been a proliferation of materials used to control pests. Many of these pesticides are highly toxic to humans, animals, or plants, thus they become highly hazardous unless used according to prescribed safety practices.

The Director of Agriculture of the State of California has established a list of restricted materials based upon their danger to public health, hazard to applicators and farm workers, hazard to domestic animals (including honeybees), hazard to crops, and to the environment in general. County regulations have been adopted governing the application of these pest control materials. The regulations prescribe the time, conditions of use, and other safety precautions. Both commercial pest control operators and growers must obtain a use permit from the county office to buy and use any of these restricted materials.

Explosives

Explosives are currently being transported through Tracy by both rail and trucks. The Southern Pacific Railroad transports munitions to the Concord Naval Weapons Station in Contra Costa County, some of which are transported through Tracy. Rail shipment of explosives is not regulated, but is normally maintained to the standards of the U.S. Department of Transportation for special car design and safety procedures for loading and switching. The railroad companies have initiated the practice of placing munition cars on non-stop trains through populated areas.

Explosives transported by truck are regulated by the U.S. Department of Transportation National Safety Standards. The National Safety Standards have been incorporated into the California Vehicle Code and Health and Safety Code. Explosives and corrosives may only be transported on routes established by the California Highway Patrol (CHP), which issues citations for route and other violations. In addition, safe stopping and safe parking places are established by the CHP (see Figure 4.3.8). Bridges have individual requirements for the passage of corrosive and flammable materials. Truck drivers are required to be provided with detailed



written information on how to deal with the specific material being carried in case of an emergency.

Regulations are also applied to labeling, packaging, and loading of explosives, safety equipment on trucks, and signs for public information. Permits are granted to trucking companies and can be revoked if violations are found. The limits of CHP manpower do not permit high levels of enforcement. No more than random spot checks are possible, yet numerous citations are issued. Permits for the use and storage of explosives are granted by the San Joaquin County Sheriff's Department.

Radioactive Materials

Approximately 100,000 shipments of radioactive materials are made through California each year. Because of the proximity of the Lawrence Radiation Laboratory and the Rancho Seco Nuclear Power Plant, and the availability of highway and rail facilities, radioactive materials are shipped through San Joaquin County and the possibility of an accident exists.

A permit from the State Department of Health is necessary in order to use radioactive materials. Permits granted in San Joaquin County are primarily to hospitals or medical groups, educational institutions, governmental agencies, and the larger industries.

Other Hazardous Substances

Extremely hazardous and toxic substances routinely pass through the county every day. The extent and degree of this hazard is not precisely known by any agency. Regulations are less restrictive than for explosives, and these substances travel in a relatively free environment. The proximity of major transportation routes to population centers adds to the risk. When the amount of hazardous materials being transported through the county is definitely determined, the full extent of the risk involved will be known. However, the chance of a disaster occurring because of the transportation of hazardous materials through the county is real and cannot be discounted. At the present time, the transportation of hazardous materials is regulated by various agencies. For example, liquified petroleum gas is regulated by the California Division of Industrial Safety. Flammable liquids are regulated by the State Fire Marshal. The California Highway Patrol regulates other hazardous materials.

Problems and Concerns

Hazardous materials present several common problems with regard to their transportation, storage, and use. Much of the regulation of hazardous materials lies with the state and federal governments. However, the city can exercise some land use control and be prepared for disasters. There needs to be an awareness of the modes of transportation so that caution may be exercised in the location of residential areas and sensitive facilities in relation to major routes. Storage areas need to be isolated from urban areas and from public facilities in rural areas. There is also the concern of a hazard spreading to other areas by virtue of air movement or explosions. (See Section 4.3.5 of the Technical Supplement.)

With regard to agricultural operations, nearby residents, as well as agricultural workers, are susceptible to the hazards resulting from the application of pesticides or other agricultural chemicals. This is especially true of those rural residential areas where people who are generally unaware of agricultural practices may live. For example, children may accidentally run through fields or orchards ignoring any warning signs. The potential for injury increases as more non-farm families move to rural areas.

4.3.4 Crime Hazards

(See the Plan Policies Report, Policy Area 32.)

Law Enforcement Services and Problems

The staff of the Tracy Police Department consists of 30 professionals and 11 civilians. Police activities can be categorized into two basic functions: "case time" work (responding to calls for service, arrests and bookings, traffic enforcement, and jail operations) and preventive patrols. The latter involves cruising residential, commercial, and industrial areas to detect or deter crimes.

The city is divided into three beats, each covered by one patrolman per eight-hour shift. The patrolman tries to divide his time equally between responding to service calls and cruising his service areas, as both are considered basic protective services. Increases in offenses and arrests curtail the amount of time available for cruising, resulting in less thorough preventive patrolling, particularly if the service area is spread out. However, greater citizen involvement through I.D. programs and "Project Neighbor" is also an effective crime preventive measure and compensates for any reduced patrolling time.

The geographic boundaries of three beats may vary somewhat, depending upon such factors as the amount of crime and service calls in the area. At present, Beat 1 covers all of the area south of Eleventh Street, while Beats 2 and 3 lie to the west and east of Parker Avenue/Holly Drive.

New residential and industrial development to the south have unbalanced the work load for the three service areas, overloading Beat 1. To assure effective patrolling and to maintain existing levels of service, a Police Department draft report recommends that a fourth beat be established. A new beat would be created to cover the commercial area (roughly bounded by Richard Drive, Eaton Avenue, Franklin Avenue, and Ninth Street). The three remaining beats would be devoted to the primarily residential areas to the east, south, and west. To add a fourth beat, the Police Department would need to increase its staff by two officers. The City Council recently has moved to a minimum night manning of four and a fourth beat is scheduled for implementation in 1981-1982.

Irregular jurisdictional boundaries can cause confusion and delay response to day-to-day emergencies. While jurisdictional problems are difficult to resolve under present annexation laws, confusion on the part of the caller as to who to call is eliminated by a uniform 911 emergency telephone number. This can be dialed in any emergency and trained operators handle the call.

Crime Prevention Through Physical Planning

Citizen action has been shown to be an effective means of combating theft and preventing other types of crimes. Citizen action can be facilitated by the creation of crime preventive building and space design, a concept of designing buildings and neighborhoods to achieve the following objectives:

- To promote the proprietary interest of residents in neighborhood or apartment complex activities;
- To permit the identification of suspicious happenings or persons (in part by increasing recognition of neighbors); and
- To make it evident to the potential criminal that he or she could be observed and could very likely be apprehended.

Much crime is crime of opportunity rather than premeditated crime. Thus "defensible space design," which tends to promote citizen surveillance and action, is an important concept for reducing crime—and it offers an alternative or supplement to locks and bolts or other mechanical devices.

Design features for the creation of defensible space include the following:

- A visually well-defined separation between public and private areas.
- Windows placed for easy resident surveillance of yards, corridors, entrances, streets, and other public and semi-public places.
- Landscaping that permits surveillance of open areas and entryways and does not provide spaces for concealment.
- Design that relates grounds to particular dwelling units in the apartment complexes so the residents recognize certain areas as for their use, and take an interest in them.
- Delineation of city streets to create territorially defined blocks and areas by closing or modifying existing streets and designing new streets to restrict but not exclude vehicular movement. (However, access and adequate turnaround radii for emergency vehicles is important and street patterns should facilitate patrol observation.)
- Elimination of undefined hallways, particularly double-loaded corridors, shared by a large number of families. Entries and circulation corridors should be designed so that as few families as possible share a common lobby. This facilitates recognition of strangers.
- Well-lighted streets, entrances, and house numbers.
- Well-lighted and windowed apartment stairwells where possible.
- Well-positioned apartment lobbies or condominium recreation rooms that can be surveyed from the street.

- Location of kitchen and living areas to facilitate surveillance.
- Limitation of access into and between buildings so escape routes are fewer and undetected entrance is more difficult.

These design features were shown to provide a greater degree of crime deterrence than did better locks, etc. in urban public housing projects that were studied.⁵³

Similar defensible space techniques and other security precautions have been defined for other types of uses.

For industrial and commercial buildings, the following general design principles can be applied:

- Landscaping, location of buildings, walls, etc. should facilitate surveillance from the street and from neighboring structures and not provide places for concealment.
- The street system should allow emergency vehicle access around the buildings.
- Parking, walkways, etc. should be located where surveillance from streets or from an attendant is possible to reduce worker or customer isolation when walking to and from cars.
- Access to buildings or around groups of buildings, and access between buildings, should be limited so escape routes are fewer and entrance is made more difficult.
- Access to roofs by parking structures, pallets, flagpoles, etc. should be eliminated or avoided.
- Windows should be held to a minimum on the first floor, if possible, and windows made burglar-resistant.
- Buffer zones (walls, parks, busy streets) should be provided between industrial and commercial areas and surrounding areas to make it more difficult to escape unseen.
- If possible, areas should be designed so they can be sealed off when not in use.
- Alarm systems should be installed if possible on a zone basis so the entire area does not have to be sealed off in an emergency.
- Street names and building numbers should be well lit for easy identification.

⁵² Newman, Oscar, 1972. Defensible Space: MacMillian, New York.

Recreational area design features for crime prevention include:

- Good lighting;
- Designs that facilitate surveillance from streets and nearby buildings; and
- Location of park buildings and high use activities near streets.

Many defensible space principles are difficult to apply in low density residential areas or semi-rural areas where the desired life-style requires features that separate each home from others and from the road. In these areas, citizen action within the existing physical setting can be effective in reducing crime; i.e., Neighborhood Watch or similar programs. These programs are intended to encourage acquaintance among neighbors, foster an attitude of caring for neighboring property, promote permanent identification marking of household items, and encourage the display of signs on property indicating valuable items have been marked. Tracy has established groups under the Neighborhood Watch Program. The Police Department feels the program is effective, and points to localized reduction in crime.

In commercial areas, building codes require certain types of locks on doors and windows; reinforced door jamb construction; hinges with non-removable pins; door construction that cannot be kicked or broken through easily; adequate lighting; certain windows made of burglar-resistant materials; and locking or securing any hatchways, air vents, air ducts, or skylights of a certain size. In residential areas, building codes cover exterior door and door jamb construction, locks for doors and windows, some window constructions (notably louvered windows), and hinges.

Informal advisory services may also be provided to business owners, firms, builders, or homeowners to show them how buildings may be made more secure.

4.3.5 Fire Hazards

(See the Plan Policies Report, Policy Area 33.)

The City of Tracy had 195 fires in 1980 as compared to 206 in 1979. The majority of fires affect only their immediate areas, but some become public hazards. A public hazard can occur when a fire spreads to adjacent properties, when hazardous materials are involved, when transportation routes become blocked, when there is interference with the normal servicing of a community, or when the fire protection services are over-extended and are not capable of responding to additional emergencies. Tables 4.3.6 and 4.3.7 summarize fires in Tracy in 1979 and 1980.

TABLE 4.3.6
FIRES IN TRACY IN 1979 AND 1980

Type of Fire	1979 Number	1979 - % of Total	1980 Number	1980 - % of Total
Building	58	28.0%	63	32.0%
Grass	47	23.0%	41	21.0%
Vehicle	39	19.0%	40	20.5%
Refuse	48	23.0%	31	16.0%
Outside Structure	9	4.5%	15	8.0%
Explosions	2	1.0%	2	1.0%
Mobile Homes	3	1.5%	3	1.5%
TOTAL	206	100.0%	195	100.0%

TABLE 4.3.7
FIRE LOSSES IN TRACY: 1979 AND 1980

Type of Fire	1979 Number	1979 - % of Total	1980 Number	1980 - % of Total
Injuries	9	—	12	—
Over \$15,000	3	3%	7	5%
\$5,000 to \$15,000	3	3%	8	6%
\$1,000 to \$5,000	60	66%	74	59%
Under \$1,000	25	28%	39	30%

Fire Services and Problems

Tracy's fire station at the intersection of Central Avenue and Ninth Street is centrally located with respect both to the city's geography and to the number of emergency calls received. Response times to areas north and south of the station are similar—six minutes at maximum. Staffing at the station is four persons per shift.

When the Tracy Fire Station was constructed, the city population was under 5,000 people, most of whom lived within one-half mile of the station. Growth has increased the distance that must be traveled, with a resultant increase in response time. ~~The Fire Department and City Manager's office have determined that the city must plan for two additional fire stations to serve growth in the north and south Tracy areas.~~ The north station, now being built on Grant Line Road in El Pescadero Park, will protect an area of approximately three square miles. ^{Response times} Response times will be reduced up to 50 percent. The southern station ^{will be in the vicinity of Tracy Boulevard and Schulte Road} ~~will be in the vicinity of Tracy Boulevard and Schulte Road~~. Response times in this now distant area will be reduced and any problems of interference by the railroad tracks with fire and rescue operations will be eliminated. The city began construction of the northern station in 1982 with revenue-sharing funds; ~~but the status and potential funding of the southern station is as yet undetermined.~~ ^{however the} At the completion of the northern station, 3 new firemen will be added to the current staff of 16 uniformed and 1 civilian personnel.

CITY OF TRACY GENERAL PLAN

ENVIRONMENTAL IMPACT REPORT

VOLUME II, APPENDIX B

Certified as complete by the
City of Tracy City Council
December 7, 1982

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1.0 INTRODUCTION

1.1 EIR APPROACH

This Environmental Impact Report (EIR) evaluates the probable effects of the City of Tracy's General Plan Revision. It has been prepared in compliance with the State of California's requirement for preparation of an EIR for a project that may have a significant effect on the environment (California Administrative Code, Section 15000 et seq.).

Impacts associated with a General Plan cannot be predicted with the same degree of accuracy as impacts associated with a site-specific project. Because of this, all EIR discussion assumes that all of the General Plan policies will be implemented. Furthermore, discussion necessarily is on a generalized level.

In order to integrate the components of the EIR and to avoid repetition, most of the EIR information is incorporated by reference from the following documents, which were prepared by Blayney-Dyett, Urban and Regional Planners, and modified and amended by the City of Tracy:

- City of Tracy General Plan: Plan Policies, (This will be referred to in the EIR as the "Plan Policies Report.")
- City of Tracy General Plan: Technical Supplement, (This document will be called the "Technical Supplement.")
- City of Tracy General Plan Revision Program: Issues and Options; Alternative Sketch Plans, September 1981. (Referred to in the EIR text as "Issues and Options.")
- City of Tracy General Plan Revision Program: Existing Conditions and Future Prospects, April 1981. (Called "Existing Conditions" in the EIR discussion.)

1.2 PROJECT DESCRIPTION AND LOCATION

Preparation of a new General Plan for the City of Tracy provides the first concentrated, comprehensive consideration of Tracy's potentials and problems in over 10 years. The General Plan is composed of three sections--Land Use and Circulation, Housing, and Environmental Factors--in which all the General Plan elements mandated by state law are included.

At present, Tracy's planning policies are not unified in a single document. Valid policies and action programs are scattered throughout the elements of the existing General Plan, but they are difficult to implement because they are not fully coordinated. During the past several years, the City Council and City Planning Commission have been faced with a number of decisions on issues that were not fully addressed by the existing plan. These have included a short-term need to restrict new development because of limitations in the capacity of public services and the desirability of major commercial development outside downtown. Recent development proposals have raised questions not only about the viability and costs of extending city services, but also about encroachment on agricultural lands.

Additional background information of the Tracy General Plan Revision Project is located in Existing Conditions, Section 1, and in the Plan Policies Report, Section 1.

Figure 1 illustrates the General Plan area. Maps that show the relationship of the Tracy General Plan area to the larger region can be found in the Technical Supplement, Figures 1.1 and 4.3.2.

1.3 GOALS AND OBJECTIVES

In March 1981, the Tracy City Council appointed a 24-member Citizens General Plan Task Force to determine the goals and objectives for the General Plan. Task Force findings were presented in the "General Plan Task Force Issues Report," June 1, 1981. These findings are summarized in Table 1.

2.0 APPLICABLE LAWS AND REGULATIONS

2.1 STATE OF CALIFORNIA GENERAL PLAN REQUIREMENTS

Each city and county in the State of California is required to prepare a long-term General Plan for its physical development (California Government Code, Section 65300 et seq.). The authority for and scope of General Plans is presented in Appendix A to the Technical Supplement.

2.2 STATE OF CALIFORNIA NOISE REGULATIONS

California Noise Insulation Standards (California Administrative Code, Title 25, Section 28). These standards, applicable to new hotels, motels, apartment houses, and dwellings other than detached single-family dwellings, state that: "Interior community noise equivalent levels (CNEL) with windows closed, attributable to exterior sources, shall not exceed an annual CNEL of 45 decibels (dBA) in any habitable room." These regulations also require acoustical analysis of any residential structure located within an annual CNEL contour of 60 dBA to show that the structure has been designed to limit intruding noise to the prescribed allowable levels. Policy 28-2 of the Plan Policies Report assures Tracy's compliance with these standards.

California Airport Noise Standards (California Administrative Code, Title 21, Sections 5000 et seq.). These standards define the level of noise acceptable to a person residing in the vicinity of any airport as CNEL 65 dBA. Plan Policy 28-4 reflects these standards.

2.3 STATE ENERGY REGULATIONS

California Administrative Code, Title 24, contains energy conservation standards designed to help reduce energy consumption in California. These regulations establish design criteria for buildings and stipulate maximum allowable energy consumption for varying types of structures. Design criteria place emphasis on the building envelope, particularly glazing and insulation, and on lighting, heating, ventilation, and hot water systems.



Figure 1.
CITY OF TRACY AND
URBAN PLANNING AREA

- City Limits
- Urban Planning Area

TABLE 1
TRACY GENERAL PLAN REVISION
GOALS AND OBJECTIVES

- Maintain a balanced rate of growth among residential population, jobs, and ability to provide services.
- Preserve agricultural land.
- Limit residential and commercial development in rural areas.
- Encourage greater diversity in new residential development.
- Provide for a diverse mix of housing types, densities, and price ranges, ensuring low and moderate income housing opportunities.
- Stabilize and improve older neighborhoods.
- Provide additional parks, open space, and recreational facilities close to residential areas.
- Protect residential neighborhoods from major commercial and industrial development but provide neighborhood commercial activities within walking distance of residential areas.
- Revitalize downtown.
- Specify areas for expansion of office-commercial development.
- Provide industrial sites for non-rail users.
- Separate industrial uses from residential development.
- Improve emergency access to South Tracy.
- Reduce truck traffic on city streets by locating truck routes on the perimeter.
- Diversify the street system and provide additional east-west routes.
- Improve parking standards to reflect the use of smaller cars, and provide more off-street parking.
- Encourage bicycle use and provide bike lanes.
- Maintain sight distances at all intersections and provide for adequate pedestrian flow.

California Government Code (Section 66473 et seq.) requires subdivisions to be designed to provide, to the extent feasible, for future passive or natural heating or cooling opportunities as affected by lot size and configuration and by building orientation. These regulations also enable local jurisdictions to require easements assuring each unit's right to receive sunlight as a condition of tentative map approval.

Section 4.1.6 of the Technical Supplement discusses subdivision and building design criteria for energy conserving purposes. Policies 27-1 through 27-6 of the Plan Policies Report reflect the standards of state energy regulations and encourage further energy conservation measures.

2.4 AIR QUALITY REGULATIONS

All of San Joaquin County, including the Tracy General Plan area, is responsible for adhering to the San Joaquin County Air Quality Plan required by the Clean Air Act Amendments of 1977. The previous Air Quality Plan was prepared in 1978; the San Joaquin County Air Quality Management Plan was adopted in March 1982. Section 4.3.7 of the Technical Supplement discusses these plans in greater detail. State of California and federal air quality standards are discussed in the same section and are summarized in the Technical Supplement, Table 4.3.12. Policies 35-1 through 35-3 should ensure the City of Tracy's compliance with applicable air quality regulations.

2.5 SAN JOAQUIN COUNTY GENERAL PLAN

The Tracy General Plan area includes a large area under the jurisdiction of San Joaquin County, and many of Tracy's General Plan issues are of regional concern. The county Safety, Seismic Safety, Conservation, and Noise Elements form the basis of corresponding portions of the Tracy General Plan.

The current county General Plan land use and circulation proposals for the Tracy area differ, but not in broad concept, from those of the proposed Tracy General Plan. After the city has adopted a revised General Plan, it will request the county to bring its plan for the unincorporated area within the Tracy sphere of influence into conformity.

3.0 POPULATION, HOUSING, AND EMPLOYMENT

Population, Housing, and Employment are discussed in the Technical Supplement, Sections 1, 2.2, 2.3, and 3. Policies in the Plan Policies Report that relate to these topics are Policies 5-1 through 7-8 and Policies 17-1 through 21-10.

Population in the Tracy Planning Area, which, as defined by the County Planning Department, includes an area larger than the Tracy sphere of influence, is expected to grow from 26,800 in 1980 to 52,200 in 2000. The number of jobs available will increase from 12,740 in 1980 to 19,500 in 2000. The number of new housing units needed by Tracy from 1982-1986 is estimated by the San Joaquin County Council of Governments to be 2,390. Of these, 26.5 percent is projected to be needed by very low income households, 19.4 percent by other lower income households, and 20 percent by moderate income households. Plan Policies 17-1 through 21-10 taken together form a program to enable these housing needs to be met.

The plan's impacts are significant and beneficial because it provides for the employment and housing needs of an increasing share of projected San Joaquin County population.

Table 2 summarizes the location of information within the Plan Policies Report and Technical Supplement for population, housing, and employment and for all other EIR topics.

4.0 LAND USE

The environmental impacts of the Land Use Element result from the amount of population and employment growth, the density of development, and the location of and form of urban expansion.

The plan has significant beneficial impacts in that it encourages an increase in the density of development, thereby minimizing land consumption at a given population level, and it directs development away from the most versatile agricultural land. Policies 2-1 through 2-3 maintain a compact urban form, thereby minimizing the impact on agriculture for a given amount of land converted to urban use. Because it accommodates growth, the plan has a significant adverse impact on the quantity of agricultural land available for production.

5.0 CIRCULATION

Existing and future trafficways, railroads, transit, bicycle, and pedestrian circulation, and Tracy airport, are addressed in Section 2.4 of the Plan Policies Report and in Sections 2.7 and 2.8 of the Technical Supplement.

Plan Policies 12-1 through 12-7 propose improvements to the existing trafficways system that will improve circulation, lower traffic volumes through residential neighborhoods, accommodate anticipated traffic volumes, and move truck routes from the center of the city to its perimeter. Noise and air quality impacts of the Circulation Element are discussed in Section 7 of this EIR.

The remaining policies of Section 2.4 protect the airport from incompatible adjacent land uses, encourage continued transit opportunities, propose a system of bikeways, and provide for improvements to pedestrian circulation.

TABLE 2
CITY OF TRACY GENERAL PLAN REVISION
SUMMARY OF ENVIRONMENTAL IMPACT REPORT DISCUSSION

<u>Topic</u>	<u>PRIMARY LOCATION OF INFORMATION</u>		<u>Significant Impact</u>
	<u>Plan Policies Report</u>	<u>Technical Supplement</u>	
<u>Population, Employment, and Housing</u>	Sections 2.1 & 3.0	Sections 1.0, 2.2, 2.3, & 3.0	Beneficial
<u>Land Use</u>	Section 2.1	Section 2.0	Adverse
<u>Circulation</u>	Section 2.4	Sections 2.7 & 2.8	Beneficial/Adverse
<u>Social Environment</u>			
Historic Resources	Section 4.1	Section 4.1.5	No
Archaeologic Resources	Section 4.1	Section 4.1.5	No
Scenic Resources	Section 2.5	Section 2.7	No
Open Space	Section 2.2	Section 2.4	Adverse/Beneficial
<u>Community Services</u>			
Police Services	Section 4.3	Section 4.3.4	No
Fire Services	Section 4.3	Section 4.3.5	No
Emergency Services	Section 4.3	Section 4.3.6	No
Wastewater	Section 2.3	Section 2.6	No
Solid Waste	Section 2.3	Section 2.6	No
Engineered Drainage	Section 2.3	Section 2.6	No
Water Supply	Section 2.3	Section 2.6	No
Schools	Section 2.3	Section 2.5	No
Parks and Recreation	Section 2.3	Section 2.4	No
<u>Physical Environment</u>			
Geographic Setting and Climate	—	Sections 4.1.4 & 4.1.6	—
Geology and Seismic Safety	Section 4.3	Section 4.3.1	No
Flood Hazards	Section 4.3	Section 4.3.2	No
Soils and Agriculture	Sections 2.1 & 4.1	Sections 2.0 & 4.1.4	Adverse/Beneficial
Noise Environment	Section 4.2	Section 4.2	Adverse/Beneficial
Air Quality	Section 4.3	Section 4.3.7	Adverse/Beneficial
Water Quality	Section 4.1	Section 4.1.1	No
Vegetation and Wildlife	Section 4.1	Section 4.1.2	No
Natural Drainage	—	Section 4.1.1	No
Hazardous Materials	Section 4.3	Section 4.3.3	No
Extractive Resources	Section 4.1	Section 4.1.3	No
Energy Resources	Section 4.1	Section 4.1.6	No

The plan's impacts are significant and beneficial in that it minimizes increases in traffic volume on heavily traveled arterials and routes truck traffic away from existing residential areas. Adverse impacts will result at some locations as traffic volumes increase with population and employment growth.

6.0 SOCIAL ENVIRONMENT

Table 2 summarizes the location of plan policies and discussion related to historic, archaeologic, scenic resources, and open space. The policies of the Tracy General Plan Revision have beneficial impacts in that they protect these resources, make provisions for schools and parks, and set aside open space for future residents. The reduction of open space by conversion of agricultural land to urban use is an adverse impact of the plan.

7.0 COMMUNITY SERVICES

Sections 2.3 and 4.3 of the Plan Policies Report and Sections 2.6, 4.3.4, 4.3.5, and 4.3.6 of the Technical Supplement discuss community services in Tracy. The General Plan does not include proposals for utilities, drainage, or solid wastes because insufficient current information is available. Studies underway on wastewater treatment, water supply, and drainage may affect the sequence of development of the plan's land use proposals. Plan Policies 32-1 through 34-5 address the City of Tracy's police, fire, and emergency services.

Although the plan creates large increases in demand for community services, it does not have significant adverse impacts on ability to provide services that normally must be expanded with population and employment growth. The location of growth proposed by the plan may have significant beneficial effects on the efficiency of the wastewater collection system.

8.0 PHYSICAL ENVIRONMENT

Table 2 summarizes the locations of information about 12 subjects under the heading of Physical Environment. The General Plan at build-out will result in a significant amount of agriculture land being converted to urban uses. Plan Policies 2-1 to 2-3 and 25-1 to 25-5 have been proposed to minimize the urbanization of agriculture lands and to reduce the conflicts between these uses while accommodating future growth.

The General Plan projects increased traffic volumes and proposes circulation changes that will result in noise and air quality impacts. Improvements and changes proposed in the Circulation Element policies will reduce noise impacts on some existing roadways and create impacts on others. Noise Element Policies 28-1 through 28-12 include proposals to buffer and reduce these noise impacts. Plan Policies 35-1 through 35-3 aim to reduce the severity of air pollution in Tracy.

Other policies of Sections 4.1 and 4.3 of the Plan Policies Report ensure protection of sand and gravel resources while reducing conflicts between resource removal and adjacent land uses, protect wildlife habitats, encourage energy conservation, and provide safeguards for the use and movement of hazardous materials in and through Tracy.

The plan has significant adverse impacts on the amount of agricultural land available for production, on air quality, and the noise environment as a result of urban growth. These impacts are mitigated to the extent feasible and therefore are beneficial when compared with the development pattern likely to result in the absence of specific policies. Policies resulting in compact development minimize vehicle miles of travel. Policies that call for designating truck routes on arterials that do not have noise-sensitive adjoining uses or that can have noise attenuation measures incorporated prior to or at the time of development minimize noise impacts.

9.0 ALTERNATIVES DESCRIPTION AND ANALYSES

The three alternative sketch plans were designed to illustrate options suitable for mapping at the General Plan level of detail, and are discussed more specifically in the Issues and Options Report. Each alternative was designed to accommodate the same population in the year 2000 at the same average number of housing units per developed acre. The most important differences among the plans are the direction of growth and the extent of the area within which growth would occur.

9.1 ALTERNATIVE A: GROW SOUTH

This alternative continues the recent development pattern of southward growth. A compact urban form is maintained in order to minimize conversion of agricultural acreage presently under the Williamson Act contract. Slightly higher densities would reduce the amount of agricultural land consumed; 30 percent of the housing units in expansion areas would be multi-family units to be incorporated in the design of each development larger than 20 acres.

Growth to the south is oriented toward downtown and hence would support revitalization efforts.

In some instances, southward growth would not result in efficient use of public services and community facilities. Some, but not all, of the new residential development could make use of the existing industrial trunk sewer line, thus postponing construction of a Corral Hollow Road trunk line. Sewer costs per unit for perhaps the first 1,400 units would be the lowest of any alternative if connection to the industrial sewer is permitted. However, eventual construction of the Corral Hollow trunk would cost more per unit served because it would serve fewer units. The lack of a Corral Hollow Road trunk line also would make annexation and servicing of the Larch-Clover neighborhood costly and possibly infeasible. Southward development would concentrate traffic on Tracy Boulevard, although it need not be a truck route north of Valpico Road. Residential growth would require the school districts to sell two vacant sites and purchase alternative sites south of Schulte Road.

9.2 ALTERNATIVE B: GROW WEST

This alternative occupies the same amount of land as Plan A, but by directing growth to the west, pressure on orchard land east of Tracy Boulevard could be relieved, and more separation could be provided between existing industrial areas and developing residential areas. Public service costs are likely to be the lowest because the maximum number of housing units would contribute to the construction of a trunk sewer in Corral Hollow Road and to its development as an arterial street. The Corral Hollow Road trunk line would allow Larch-Clover to be annexed and serviced at minimum cost. Greater use of Corral Hollow Road would result in the fewest conflicts between local trips and commuter and truck traffic.

However, westward growth would place downtown off-center, shifting potential downtown sales to potential shopping center sites along Eleventh Street and Corral Hollow Road.

9.3 ALTERNATIVE C: GROW SOUTHWEST

Allowing more choice of parcels for development to house the same population as Plans A and B would have both benefits and disadvantages. Land costs are likely to be a little lower, but the cost of public improvements probably would be a little higher. The number of miles of street to sweep, light, and patrol would be more. Early disinvestment and discontinuance of agricultural operations is more likely because there would be a longer perimeter between developed land and agriculture, and more agricultural owners would anticipate conversion in the short term, although the amount of land urbanized during the next 20 years would be the same as on Plans A and B. A spread-out urban pattern also would have adverse effects on downtown vitality because future residential and office development would be located farther away.

The sketch plans can be compared most easily by examining Table 3, Summary of Planning Options Illustrated by Sketch Plans, Table 4, Comparative Evaluation of Sketch Plans, and Table 5, Land Use in Acres--Plan and Four Alternatives.

9.4 ALTERNATIVE D: NO PROJECT

Retention of the existing General Plan would likely result in piecemeal and incremental application of policies. Continued designation of an area for urban development that is much larger than is likely to be needed during the next 20 years probably would result in leap-frog development on agricultural lands, increased conflicts between urban and agricultural uses, and a greater loss of agricultural lands and production. In addition, such scattered development is not easily or efficiently provided with urban services.

10.0 IMPACT OVERVIEW

10.1 UNAVOIDABLE ADVERSE IMPACTS

At build-out of the Plan, up to 2,700 acres of agricultural land will be converted to urban uses and will alter the landscape in these areas. Development will result in incremental increases in air and noise pollution resulting from increased traffic volumes. Temporary impacts will be

TABLE 3
SUMMARY OF PLANNING OPTIONS ILLUSTRATED BY SKETCH PLANS

Alternative A: Growth South	Alternative B: Grow West	Alternative C: Grow Southwest
<u>Urban Growth</u>	<u>Urban Growth</u>	<u>Urban Growth</u>
1C: ^a Maintain compact growth.	1D: ^a Direct growth to locations economically served by community facilities.	1E: ^a Allow a wide choice in the location of growth but levy capital improvement fees.
2A: Maximum preservation of agricultural land.	2C: Preserve only valuable orchard land to the southeast.	2D: Do not attempt to preserve agricultural land.
2B: Increase overall average residential density to preserve agricultural land.		
<u>Residential Development</u>	<u>Residential Development</u>	<u>Residential Development</u>
5A: Require 30% multi-family units on parcels larger than 20 acres.	5C: Retain higher density housing along major arterials.	5B: Allow 30% multi-family units on parcels larger than 20 acres.
7A: Reduce residential densities in older neighborhoods.	7A: Reduce residential densities in older neighborhoods.	7A: Reduce residential densities in older neighborhoods.
8C: Do not annex Larch-Clover, but work with County to improve.	8B: Annex Larch-Clover and redevelop to higher density.	8A: Annex Larch-Clover and use block grant funds to improve.
9A: No residential development east of industrial areas.	9A: No residential development east of industrial areas.	9A: No residential development east of industrial areas.
9B: Use major thoroughfares and landscaping to separate industrial and residential areas.	9C: Create buffer strip of offices and/or light industry.	9C: Create buffer strip of offices and/or light industry.

^aIdentification numbers refer to options discussed in the Issues and Options report.

TABLE 3
SUMMARY OF PLANNING OPTIONS ILLUSTRATED BY SKETCH PLANS
(Continued)

Alternative A: Grow South	Alternative B: Grow West	Alternative C: Grow Southwest
<u>Community Facilities</u>	<u>Community Facilities</u>	<u>Community Facilities</u>
10B: ^a Acquire one or more large parks.	10B: ^a Acquire one or more large parks.	10B: ^a Acquire one or more large parks.
10D: Locate new parks and schools on adjoining sites.	10D: Locate new parks and schools on adjoining sites.	10D: Locate new parks and schools on adjoining sites.
10E: Locate parks away from schools.	10E: Locate parks away from schools.	10E: Locate parks away from schools.
10F: Combined park and storm drainage facilities.	10F: Combined park and storm drainage facilities.	10F: Combined park and storm drainage facilities.
12B: Develop industrial/commercial uses around airport.	12A: Maintain agricultural use around airport.	12A: Develop industrial/commercial uses around airport.
<u>Commercial/Industrial Development</u>	<u>Commercial/Industrial Development</u>	<u>Commercial/Industrial Development</u>
13C: Limit size/number of outlying neighborhood shopping centers.	13C: Limit size/number of outlying neighborhood shopping centers.	13C: Limit size/number of outlying neighborhood shopping centers.
14D: Designate west side of Tracy Blvd. for medical offices.	14B: Retain existing POM zone.	14A: Enlarge POM zone around hospital.
	14C: Permit only medical offices around hospital.	
15A: Designate Eleventh St. as office corridor.	15A: Designate Eleventh St. as office corridor.	15A: Designate Eleventh St. as office corridor.

TABLE 3
SUMMARY OF PLANNING OPTIONS ILLUSTRATED BY SKETCH PLANS
(Continued)

Alternative A: Grow South	Alternative B: Grow West	Alternative C: Grow Southwest
<u>Commercial/Industrial Development</u>	<u>Commercial/Industrial Development</u>	<u>Commercial/Industrial Development</u>
15B: ^a Create office park on Grant Line/Corral Hollow Rds.	15B: ^a Create office park on Grant Line/Corral Hollow Rds.	15B: ^a Create office park on Grant Line/Corral Hollow Rds.
16A: Designate land in vicinity of existing industrial development.	16A: Designate land in vicinity of existing industrial development.	16A: Designate land in vicinity of existing industrial development.
17A: Create an industrial park zone to buffer heavy industry and residential areas.	17A: Create an industrial park zone to buffer heavy industry and residential areas.	17A: Create an industrial park zone to buffer heavy industry and residential areas.
<u>Traffic</u>	<u>Traffic</u>	<u>Traffic</u>
19A: Extend MacArthur Dr.	19B: Connect Chrisman Rd.	19B: Connect Chrisman Rd.
19C: Designate Grant Line, Corral Hollow, portions of Eleventh, Valpico, MacArthur, and Chrisman as truck routes.	19C: Designate Grant Line, Corral Hollow, portions of Eleventh, Valpico, MacArthur, and Chrisman as truck routes.	19C: Designate Grant Line, Corral Hollow, portions of Eleventh, Valpico, MacArthur, and Chrisman as truck routes.
20A: Connect Valpico Rd.	20A: Connect Valpico Rd.	20A: Connect Valpico Rd.
	20B: Extend Schulte Rd.	20B: Extend Schulte Rd.

TABLE 4
COMPARATIVE EVALUATION OF SKETCH PLANS

	<u>Alter- native A</u>	<u>Alter- native B</u>	<u>Alter- native C</u>
<u>Fiscal Impacts</u>			
Sewer Construction and Operating Cost	2	1	3
Street Construction Cost	2	1	3
Urbanized Area Service Cost	2	1	3
Cost to Sewer Larch-Clover	3	1	2
<u>Economic Impacts</u>			
Preserves Agricultural Land	1	2	3
Supports Downtown Revitalization	1	2	3
<u>Social Impacts</u>			
Minimizes Housing Cost	3	2	1
Strengthens Sense of Community	1	2	3
<u>Environmental Impacts</u>			
Minimizes Traffic Congestion	3	2	1
Separates Housing and Industry	3	1	2
Minimizes Energy Consumption	1	1	3

Most favorable = 1

Least favorable = 3

TABLE 5
LAND USE IN ACRES
EXISTING, PLAN, AND ALTERNATIVES

	Existing Land Use ^a	Alternative A ^a	Alternative B ^a	Alternative C ^a	Alternative D ^b No Project	Plan ^a
Residential	2,418	3,150	3,071	4,210	7,336	3,617
Agriculture	6,460	3,870	3,867	2,858	89,507	3,380
Park	41	115	94	87		159
Public Facility	547	720	714	734		689
Office Commercial		128	110	129		106
Thoroughfare Commercial	183	222	222	228	4,114	216
Retail Commercial		55	77	74		87
Industrial	801	2,190	2,295	2,130		2,196
Total	10,450	10,450	10,450	10,450	100,957	10,450

^aDoes not include acreages for trafficways.

^bYear 2000 projections for Census Tracts S-52, S-53, and S-54--a larger area than the General Plan Revision 1981.

Source: Grunwald-Crawford Associates, 1969. Community General Plan Program, Tracy California: Basic Determinants for Plan Preparation.

Source: Blayney-Dyett.

associated with the construction of public and private projects, including noise, dust, fumes, vibration, and unsightliness. Economic and fiscal impacts will include the capital and operating costs required to implement the plan recommendations, including costs associated with the housing program, circulation program, noise barriers, schools, public facilities, and parks and recreation facilities.

10.2 SIGNIFICANT UNAVOIDABLE ENVIRONMENTAL CHANGES

The Tracy urban area currently consists of approximately 4,000 acres. Under the proposals of the General Plan Revision, urbanization will expand to a maximum area of approximately 7,070 acres. New growth, except for infill of the existing urban area, and development within the gravel pit areas, will primarily occur on lands currently devoted to agriculture. Approximately 75% of this agricultural land has long been committed to urban uses by the existing General Plan and residential and industrial zoning.

10.3 SHORT-TERM USES VS. LONG-TERM PRODUCTIVITY

The Tracy General Plan Revision Program accommodates future growth and development and guides this growth into areas appropriate for development. The plan preserves resources, including the most productive agricultural lands, sand and gravel resources, groundwater, vegetation, and wildlife, and provides means of obtaining standard housing for low and moderate income residents. The General Plan will result in an irreversible commitment of agricultural lands to urban uses and an irretrievable use of energy resources to accomplish the proposed development.

10.4 GROWTH-INDUCING IMPACTS

The General Plan aims to control and guide and not to stimulate or discourage growth.

Some policies may be regarded as growth-inducing. These include policies providing for low and moderate income housing, encouragement of commercial and industrial establishments to locate in Tracy, and the acquisition of recreational facilities, all of which will enhance the attractiveness of Tracy as a place to live and maintain a viable economy.

11.0 MITIGATION MEASURES OVERVIEW

The Tracy General Plan Revision Program, has four major impacts: 1) the conversion at build-out of up to 2,700 acres of agriculture land to urban uses and an accompanying reduction of open space; 2) significantly increased traffic volumes; 3) air quality impacts resulting from increased traffic volumes, and 4) noise impacts resulting from increased traffic volumes. Mitigation measures for these impacts will not eliminate but will considerably minimize the effects of the impacts.

11.1 MITIGATIONS FOR CONVERSION OF AGRICULTURE LANDS TO URBAN USES

Plan Policies 2-1 to 2-3 propose a compact urban form and south and west direction of growth to minimize the perimeter between agriculture and urban land uses, to minimize conflicts between the uses, to avoid a premature disinvestment in agriculture, and to direct urban expansion away from the highest quality agriculture land. Policies 25-1 to 25-3 do not permit the creation or expansion of rural residence districts, support the maintenance of agriculture land in viable farming units, and stabilize expectations for continued agriculture uses.

11.2 MITIGATIONS FOR INCREASED TRAFFIC VOLUMES

Plan policies 12-1 to 12-7 will improve circulation, reduce traffic volumes in residential neighborhoods, and move truck routes to the perimeter of the city. Policies 14-1 through 15-2 encourage continued support of transit, and provide for a system of bikeways and pedestrian amenities to encourage non-motorized travel.

11.3 MITIGATIONS FOR AIR QUALITY IMPACTS

Plan Policies 35-1 through 35-3 will minimize traffic congestion through design of the traffic system, encourage non-motorized travel, and reaffirm commitment to the policies of the San Joaquin County Air Quality Maintenance Plan.

11.4 MITIGATIONS FOR NOISE IMPACTS

Plan Policies 28-1 through 28-12 require continual updating of noise data and acoustical studies for new residential development within 60 decibel (dBA) contours, and apply state noise insulation standards more stringently than required by the state. They prohibit residential uses within 65 dBA contours without effective noise shielding, require noise attenuation for noise generating uses, and encourage limiting the hours of operation of noise generators. The policies encourage adoption of a community noise ordinance and increased enforcement of state vehicle noise control laws.

12.0 COMMENTS AND RESPONSES

12.1 COMMENTS RECEIVED ON DRAFT EIR

The comments received in response to the Draft EIR are included in this report on pages 18 through 21 that follow. The responses are included in Section 12.2 on page 22 of this report.

Memorandum

To : Steve Williamson, Executive Officer
State Clearinghouse
1400 - 10th Street
Sacramento, CA 95814

Date: May 10, 1982

File : 10-SJ-205 - Tracy
City of Tracy
General Plan Revision
SCH #81052157.

From : DEPARTMENT OF TRANSPORTATION
D. L. Wieman, District 10 Director

Subject: We have reviewed the above-noted report and offer the following comments:

Vol. I, page 16, 16-1 - Noise barriers within the I-205 R/W may be difficult to place because of the freeway's elevated nature. Noise barriers will not be permitted along the shoulder.

Page 28, 28-9 - Same as above.

Vol. II, Page 58, 2nd Paragraph - By removing parking along 11th Street, it will be possible to upgrade lane widths or provide a 2-way left-turn lane, but not both. Assuming 12' lanes, you need 60' of width with no allowance for right turns from the right lane.

If any work is performed within the State highway right of way, an encroachment permit will be required. Application for the permit may be obtained at our District Office, 1976 E. Charter Way, P. O. Box 2048, Stockton, CA 95201.

We urge the applicant seeking an encroachment permit to address the impacts affecting the State highway. If the applicant does not comply with our concerns, his encroachment permit will be denied.

A minimum of 4 to 6 weeks is required to process the application and issue a permit. Complex projects may require a considerably longer time.

Please send a copy of the final report to John Gagliano, Caltrans, District 10 P.O. Box 2048, Stockton, CA 95201.

John Gagliano
JOHN GAGLIANO, P.E.
A-95 Coordinator
(209) 948-7875
ATSS 423-7875

REM:mej
Attach.
cc:RJFelton

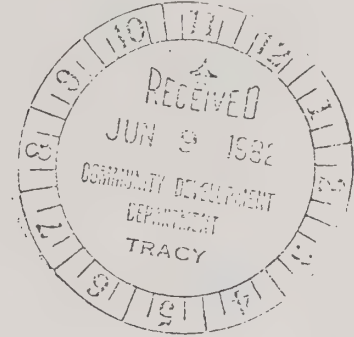


SAN JOAQUIN COUNTY

PLANNING DEPARTMENT

1810 E. HAZELTON AVE., STOCKTON, CALIF. 95205, PHONE 944-3722, (AREA CODE 209)

June 7, 1982



Tracy Planning Commission
Community Development Department
City Hall
Tracy, CA 95376

Dear Commissioners:

On June 3, 1982, the San Joaquin County Planning Commission reviewed the City of Tracy's Draft General Plan.

The County Commission concur with and support the comments of the County Planning Department, which were previously submitted to you (copy enclosed).

The Commission was particularly concerned with the rural residential areas shown on your draft plan map. Their concerns are reflected in the staff comments.

Sincerely,

Robert S. Hunter, Secretary
San Joaquin County
Planning Commission

RSH:bc

Enclosure

CITY OF TRACY GENERAL PLAN - DRAFT ENVIRONMENTAL REPORT

Initial Comments by the San Joaquin County Planning Department

1. City of Tracy General Plan - DEIR does not consider a proposed new town development within the Tracy planning area. This development proposal has been before the County since April, 1981 when a preliminary General Plan amendment report was brought before the County Planning Commission.

The following is a project description for the new town:

Carnegie New Town is a proposed new community on approximately 8,500 acres of grassy foothills five miles southwest of Tracy in the San Joaquin Valley. It has been planned for an eventual population of 36,000 people living in a balanced self-sufficient community with opportunities to live, work, and plan in the same setting.

(Carnegie New Town: Land Use/Master Plan and Narrative, May 1982, pg. 1)

More specifically, an approval of any kind for the new town project could potentially alter employment, housing, commercial development discussions and policies in the Tracy General Plan. Land use pattern changes and other impacts would also be felt should project approval and subsequent development occur.

2. The draft City of Tracy General Plan Land Use and Circulation map differs significantly from the County General Plan Land Use and Circulation map. (see map)

- A. County General Plan policies prohibit rural residential development when proposed next to urban areas. These policies are based on difficulty in providing public services to those areas and surrounding areas should more dense residential development ultimately be proposed. There is also difficulty in subdividing rural residential lots into lots allowing urban residential densities.

This situation could jeopardize County policy and planning in other areas of the County, as well as in the Tracy Planning Area, in that it could encourage others throughout the County to seek rural residential adjacent to urban areas which the County has thus far been able to discourage. Specifically these areas on the draft City of Tracy General Plan Land Use and Circulation map include:

1. Corral Hollow Road and Larch Clover Road planned rural residential area.
2. Corral Hollow Road and Mountain View Road planned rural residential area.
3. MacArthur Drive and Schulte Road planned rural residential area (southeast corner).
4. Cabe Road and Chrisman Road planned rural residential area.

- B. As an alternative, the County Planning Department suggests the incorporation of a "Suburban Density Residential" plan designation. Within the County, this designation permits 1 to 2 dwelling units per gross acre, urban services required.

From the County's perspective such a designation would be desired in those specific areas cited above in that it appears likely that utilities will be available eventually to these areas and smaller lots would be justified economically.

- C. The intent of the County Rural Residential designation is to consolidate concentrations of homesites on small acreages in rural agricultural areas. County General Plan policies call for minimizing the number and extent of rural residential areas.

Many groups of rural homes have been left in the Agriculture designation so those areas would not expand, creating further loss of agricultural land.

Specific areas on the city's draft land use map where the County views rural residential development as being undesirable include:

1. Berg Road and Eleventh Street planned rural residential area.
2. Corral Hollow Road and Valpico Road planned rural residential area.
3. Valpico Road, Bates Road, and Chrisman Road planned rural residential area.

The Valpico Road, Bates Road, and Chrisman Road planned rural residential area (as designated by the city's draft land use map) is designated Agriculture on the County land use map based on the existence of prime agricultural soils and orchard uses. A General Plan Amendment from Agriculture to Rural Residential designation in this area was denied by the San Joaquin County Planning Commission in 1978.

3. Policy Comments:

A. Policy Area 2: Urban Expansion and Agricultural Land Preservation.

Regarding Policy 2-3 specifically, the County Planning Department suggests a change in wording: "...the city shall encourage the County to remove the lands (in question) from the agricultural preserve by issuing a notice of non-renewal on the contract."

B. Policy Area 13: Airport

Generally the city should adopt an airport zone, similar to the County's so that it may be applied when affected areas are annexed.

4. Corrections

P. 50, Paragraph 5

San Joaquin County recommends 5.0 acres per 1,000 residents for neighborhood and community parks. (Rather than the 2.5 acres noted).

12.2 RESPONSES TO COMMENTS

Memo From: D. L. Wieman, District 10 Director, Department of
Transportation
By John Gagliano, A-95 Coordinator

This memo was received and the suggestions incorporated as follows:

Volume I, page 6, Implementing Policy 16-1. This item was reworded in the final EIR to include noise attenuation measures within private property near the freeway as well as within the freeway right-of-way.

Volume I, page 28, Implementing Policy 28-9. The above comments apply.

Volume II, page 58, 2nd paragraph. Changed to the bottom of page 59 and the top of page 60 in the revised draft. This has been reworded to provide for lane widening or left turn storage as suggested.

Letter from San Joaquin County Planning Commission concurring with comments received from the County Planning Department.

1. In response to comment 1 concerning the proposed amendment to the County General Plan for the Carnegie proposal, since this proposed Carnegie project is still not yet in the public hearing stage and the draft EIR has not been amended, it is believed that the concerns expressed by the county planning staff should be addressed in the Carnegie EIR.

2. The Revised General Plan has been revised in both the text and the map to eliminate the concerns expressed in comment No. 2 as follows: the designation of "rural residential" has been changed in the city plan to "very low density residential" to avoid confusion with the county designation; in addition, the map has been changed to follow the lead of the county by including almost all of the areas so designated in the agricultural category.

3. In both instances these suggestions have been followed. Policy 2-3 has been reworded as suggested; Policy area 13 has been revised to include the range of land use and height regulations suggested.

4. Volume II has been corrected to reflect this higher ratio.

RESOLUTION NO. 4450

A RESOLUTION OF THE CITY COUNCIL OF THE CITY OF TRACY CERTIFYING THE ENVIRONMENTAL IMPACT REPORT FOR THE REVISED GENERAL PLAN

WHEREAS, a program to update and revise the Tracy General Plan was initiated, data collected, studies made, plans prepared, and community meetings held; and

WHEREAS, the revised General Plan and the supporting Technical Supplement have incorporated an Environmental Impact Report (EIR) as part of the plan and planning process; and

WHEREAS, comments were received, considered, and incorporated in the EIR and General Plan in the process of developing the final EIR from the draft EIR; and

WHEREAS, the Planning Commission of the City of Tracy, after holding public hearings and fully considering the draft EIR and General Plan, recommended certification of the EIR and approved the General Plan; and

WHEREAS, the EIR, as recommended by the Planning Commission, analyzes the significant environmental effects of the General Plan, identifies and evaluates alternatives, and discloses possible ways to reduce or avoid the possible environmental damage; now, therefore,

BE IT RESOLVED, that the City Council of the City of Tracy certifies that the final EIR has been completed in compliance with the California Environmental Quality Act and that the City Council has reviewed and considered the information contained in said EIR prior to adopting the General Plan.

* * * * *

The foregoing Resolution No. 4450 was passed and adopted by the City Council of the City of Tracy on the 7th day of December, 1982, by the following vote:

AYES: COUNCIL MEMBERS: GREBIL, SIMPSON, SISSELL, SPARKS, ZANUSSI

NOES: COUNCIL MEMBERS: NONE

ABSENT: COUNCIL MEMBERS: NONE

Anthony M. Zannussi
Mayor

ATTEST:

Betty J. Rani
City Clerk

A RESOLUTION OF THE CITY COUNCIL OF THE CITY OF TRACY MAKING FINDINGS
RELATIVE TO THE ENVIRONMENTAL IMPACT REPORT AND ADOPTING THE GENERAL PLAN

WHEREAS, a program of updating and revising the Tracy General Plan and elements thereof was initiated; and

WHEREAS, after a citizen's task force representing a cross section of the community had fully considered the many studies and proposals made by planning consultant Blayney-Dyett and city staff, and recommended a plan; and

WHEREAS, the recommendations of said task force were forwarded to the Planning Commission of the City of Tracy; and

WHEREAS, said recommendations were considered by said Planning Commission at a public hearing, notice of which was duly given, on May 19, 1982, at which time testimony was received; and

WHEREAS, said public hearing was continued to a special meeting on June 2, 1982, at which time additional testimony was received and the public hearing then closed; and

WHEREAS, the Planning Commission further considered and included changes in the text and map on June 9, 1982; and

WHEREAS, on September 22, 1982, the Planning Commission recommended that the Environmental Impact Report be certified and approved the General Plan as modified, consisting of the Plan Policies and Map, and transmitted it to the City Council; and

WHEREAS, the City Council of the City of Tracy held a public hearing on October 26, 1982 to consider said General Plan; and

WHEREAS, all parties wishing to be heard and/or submit comments and recommendations were given an opportunity to do so, after which the public hearing was closed; and

WHEREAS, the City Council referred several possible map and text changes back to the Planning Commission for report and recommendation; and

WHEREAS, the Planning Commission, at their meeting of November 10, 1982, thoroughly considered said possible changes and made a report and recommendation as requested; and

WHEREAS, the City Council considered this report and recommendation as well as the Environmental Impact Report and General Plan at their meeting of November 16, 1982; at which time the staff was directed to make certain changes in the Plan Policies and Map, and schedule this matter for final consideration at the meeting of December 7, 1982; and

WHEREAS, the Environmental Impact Report has been reviewed and certified by the City Council; and

WHEREAS, the City Council has fully reviewed and considered the information contained in the Environmental Impact Report prior to approving the General Plan; and

WHEREAS, the Environmental Impact Report for this project identified the following four major impacts: the conversion of agricultural lands to urban uses; increased traffic volumes; air quality impacts resulting from increased traffic volumes; and noise impacts resulting from increased traffic volumes; and

WHEREAS, mitigation measures are contained in the General Plan and summarized in Sections 11.1, 11.2, 11.3, and 11.4 of the Environmental Impact Report; and

WHEREAS, the unavoidable significant effects; namely, urbanization of agricultural lands, irretrievable use of energy resources, and possible growth inducing policies are identified in Sections 10.2, 10.3, and 10.4 of the Environmental Impact Report; now, therefore,

BE IT RESOLVED, that the City Council of the City of Tracy hereby finds that mitigation measures have been incorporated in the General Plan relating to the impacts previously noted to the extent feasible, as described in the Environmental Impact Report and Exhibit A, attached hereto and included herein by reference; now, therefore,

BE IT FURTHER RESOLVED, that the said City Council hereby further finds that there are overriding considerations relating to the unavoidable significant effects previously identified that justify approval of the General Plan, said considerations are included briefly in the Environmental Impact Report and explained in Exhibit B, attached hereto and included herein by reference; now, therefore,

BE IT FURTHER RESOLVED, that the said City Council of the City of Tracy hereby adopts the General Plan as reflected in the Plan Policies and Map.

* * * * *

The foregoing Resolution No. 4451 was passed and adopted by the City Council of the City of Tracy on the 7th day of December, 1982, by the following vote:

AYES: COUNCIL MEMBERS: GREBIL, SIMPSON, SISSELL, SPARKS, ZANUSSI

NOES: COUNCIL MEMBERS: NONE

ABSENT: COUNCIL MEMBERS: NONE

Anthony M. Zanussi
MAYOR

ATTEST:

Betty J. Dani
CITY CLERK

EXHIBIT A

Attached to, and incorporated in, Resolution No. 4451 adopted by the City Council of the City of Tracy, December 7, 1982.

MITIGATION MEASURES OVERVIEW

The Tracy General Plan Revision Program, has four major impacts: 1) the conversion at build-out of up to 2,700 acres of agriculture land to urban uses and an accompanying reduction of open space; 2) significantly increased traffic volumes; 3) air quality impacts resulting from increased traffic volumes, and 4) noise impacts resulting from increased traffic volumes. Mitigation measures are incorporated in the Plan Policies and Map. The Technical Supplement (Volume II) provides further information and background.

MITIGATIONS - CONVERSION OF AGRICULTURAL LANDS TO URBAN USES

The following two policies, included in the Tracy General Plan Revision Goals and Objectives, are directed toward this issue:

- " Preserve agricultural land.
- Limit residential and commercial development in rural areas."

Policy Area 2 and Policies 2-1, 2-2, and 2-3 of the Plan Policies relate to this question and provide:

Guiding Policy: Preserve agricultural land to the extent that is feasible without restricting the amount of urban growth.

Implementing Policies:

- 2-1 Direct urban residential development, except for infill, to the south and west as shown on the General Plan Map. The purposes of the compact form and direction of growth designated are:
 - a. To minimize the perimeter between agricultural and urban use, thus minimizing conflicts between the two uses and avoiding premature disinvestment in agriculture.
 - b. To allow the most economical provision of public services to new development and to conserve energy by minimizing street and sewer miles and the distances residents must travel to schools, shopping, and employment.
 - c. To direct urban expansion away from the highest quality and most versatile agricultural lands in the planning area.
- 2-2 When subdivision maps have been recorded on 75 percent of parcels 20 acres or larger designated for urban residential development, the General Plan shall be amended to provide additional growth area (Phase II) as indicated on the General Plan Map.
- 2-3 Where existing Williamson Act contracts would delay development of land shown on the General Plan for urban use that could be developed and served more economically than alternative sites as determined by the city, the city shall encourage the county to remove the lands from the agricultural preserve by issuing a notice of non-renewal on the contract.

Policy Area 8 and Policy 8-1 of the Plan Policies provide:

Guiding Policy: Preserve and manage open space for agricultural production, recreation, and the public health and safety.

Implementing Policies:

8-1 Maintain the maximum amount of existing agricultural land in production by encouraging a moderate increase in overall residential density and by requiring compact development. (See Policies 2-1 and 2-3.)

Policy Area 25 and Policies 25-1 through 25-5 of the Plan Policies provide:

Guiding Policy: Preserve agricultural resources in the General Plan area and minimize the conflicts between agricultural and urban land use.

Implementing Policies:

25-1 Limit rural residential and other urban development to the areas designated by the Land Use Element of the General Plan.

25-2 Support San Joaquin County policies and zoning actions that maintain agricultural land in viable farming units and, if appropriate, consider annexation of agricultural land to ensure its maintenance.

25-3 Stabilize expectations for continued agricultural use by controlling the sequence of urban growth as shown on the Land Use Element Map and prescribed in Policies 2-1 through 2-3.

25-4 Encourage home gardeners to take effective measures to control pests and crop disease and support enforcement of state laws requiring removal of orchards and vineyards that are no longer being maintained.

25-5 Support continued enforcement by the San Joaquin County Agriculture Department of existing regulations controlling use and disposal of agricultural chemicals.

In addition, there are evaluations of Agricultural Lands in Sections 2.1 and 4.1.4, the Technical Supplement.

In summary, the plan is designed to further a compact urban form that will minimize the urban perimeter and the interface and conflicts between agriculture and urban uses. It is also designed to avoid premature disinvestment in agriculture, direct urban expansion away from the highest quality agricultural land, restrict rural residential development, support the maintenance of agricultural land in viable farming units, and stabilize expectations for continued agricultural uses.

FINDING

Based upon the preceding facts, the City Council of the City of Tracy finds that the General Plan has incorporated measures to reduce the conversion of agricultural lands to the greatest extent feasible and to an acceptable level.

MITIGATIONS FOR INCREASED TRAFFIC VOLUMES

Policy Area 12 and Policies 12-1 through 12-7 of the Plan Policies provide:

Guiding Policy: Develop an efficient trafficways system.

Implementing Policies:

12-1 Develop arterial and collector streets to meet the following standards:

	<u>Major Arterial</u>	<u>Minor Arterial</u>	<u>Collector</u>
Moving Lanes	Minimum of 4, plus left turn lane, with no on-street parking as streets are developed.	4	2
Volume (ADP)	10,000 plus	5,000-12,000	2,000-5,000
Speed (mph)	45	35	25
Traffic Control	Signals	Signals	Other

12-2 Street Classifications:

<u>Major Arterial Streets:</u>	Grant Line Road	All
	Eleventh Street	All
	Corral Hollow Road	All
	Tracy Boulevard	All
	MacArthur Drive	Schulte Road to 205 Freeway
	Linne Road	All
<u>Minor Arterial Streets:</u>	Larch Road	Corral Hollow to Holly Dr.
	Lowell Avenue	Corral Hollow to Tracy Blvd.
	Byron Road	N/W of Corral Hollow
	Schulte Road	West of Corral Hollow to Chrisman Road
	Valpico Road	Corral Hollow to Tracy Blvd.
	Lincoln Boulevard	South of Grant Line Road
	Holly Drive	11th Street to Larch Road
	Central Avenue	11th Street to Tracy Blvd.
	East Street	Grant Line Road to 6th Street
<u>Collector Streets:</u>	It is recommended that the streets so shown on the General Plan Map be included in this street category; however, there may be minor adjustments and additional collector streets required due to neighborhood street design and/or projected traffic volumes.	

12-3 Provide systems of collector streets in new residential areas that lead directly to arterial streets and offer convenient access to schools, parks, and downtown.

Exhibit A

12/6/82

-4-

12-4 Use curvilinear streets where feasible within the existing road grid.

12-5 Develop Corral Hollow Road as a major arterial and truck route with appropriate sound attenuation adjoining residential areas.

12-6 Extend MacArthur Drive as a major arterial street from Grant Line Road under the Eleventh Street overpass to join the existing MacArthur Drive alignment north of the railroad tracks.

12-7 Limit large trucks to the system of truck routes shown on Figure 1 -- except for pickup and delivery -- removing through truck traffic from Eleventh Street, Tracy Boulevard, and Grant Line Road.

Policy Area 14 and Policies 14-1 and 14-2 provide:

Guiding Policy: Provide and encourage transit service where it can be efficient.

Implementing Policies:

14-1 Maintain demand-responsive transit or subsidized taxi service for senior citizens and disabled persons as feasible.

14-2 Encourage van pooling and car pooling for commuters into and out of Tracy and for Tracy workers at areas of high employment concentration such as Defense Depot Tracy and the Western Pacific Industrial Park.

Policy Area 15 and Policies 15-1 and 15-2 provide:

Policy Area 15: Bicycles and Pedestrians

The plan's bike proposals call for bicycle traffic to use the same routes as automobiles. Arterial streets near the center of the city provide the most direct routes and may be acceptable for bikes once heavy trucks are rerouted. Children and recreational riders need separated bikeways along major arterials. These can be provided in greenways where arterial frontage has not yet been developed, and can also be used by joggers, pedestrians, and roller skaters.

Guiding Policy: Provide a safe and attractive environment to encourage bicycling and walking.

Implementing Policies:

15-1 Provide bike paths in greenways bordering arterial streets as shown on the plan.

15-2 Provide direct pedestrian routes to schools, parks, and shopping areas, preferably by design of the system of local streets, but also by separate walkways where walking distances can be shortened.

In Summary, the plan, through these policies, will improve circulation, minimize traffic in residential neighborhoods, place truck routes on the perimeter of the city, encourage continued transit use and support, and provide for bicycle and pedestrian facilities and amenities.

FINDING

Based upon the preceding facts, the City Council of the City of Tracy finds that the General Plan has incorporated measures and policies to mitigate or avoid the impact of increased traffic volumes.

MITIGATIONS FOR AIR QUALITY IMPACTS

Policy Area 35 and Policies 35-1 through 35-3 are designed to minimize traffic congestion and idling and resulting impact, encourage non-motorized travel, and reaffirm the commitment to the policies of the ACMP.

Policy Area 35 and Policies 35-1 through 35-3 provide:

Guiding Policy: Prevent significant deterioration of local and regional air quality.

Implementing Policies:

- 35-1 Cooperate with and support regional, state, and federal agencies to improve the air quality throughout the region's air basin.
- 35-2 Develop and implement a Reasonable Available Control Measure plan (including employee ride sharing, traffic signal synchronization, bicycle/pedestrian facilities, energy-conserving street lighting, reducing automobile idling, modified work schedules, preferential car pool parking, and other control measures) in conformance with the Air Quality Management Plan for San Joaquin County.
- 35-3 Encourage private businesses and industries to implement all reasonable available control measures in conformance with the Air Quality Management Plan for San Joaquin County by publicizing the environmental and potential economic benefits of such programs.

FINDING

Based upon the preceding, the City Council of the City of Tracy finds that the General Plan has included policies to mitigate air quality impacts.

MITIGATIONS FOR NOISE IMPACTS

Plan Policies 28-1 through 28-12 require continual updating of noise data and acoustical studies for new residential development within 60 decibel (dBA) contours, and apply state insulation standards more stringently than required by the state. They prohibit residential uses within 65 dBA contours without effective noise shielding, require noise attenuation for noise generating uses, and encourage limiting the hours of operation of noise generators. The policies encourage adoption of a community noise ordinance and increased enforcement of state vehicle noise control laws.

Policy Area 28 and Policies 28-1 through 28-12 provide:

Guiding Policy: Ensure and maintain a quieter noise environment in the Tracy General Plan area.

Implementing Policies:

- 28-1 Maintain data for calculating current and projected noise contours for major noise generators.
- 28-2 Continue to require acoustical studies for new residential projects within 60 dBA Ldn or greater, using the contours provided in the Technical Supplement and updated contours where conditions have changed.
- 28-3 Apply State Noise Insulation Standards to new noise-sensitive uses, including single-family, detached residential developments, hospitals, convalescent hospitals, and rest homes.
- 28-4 Prohibit new residential land uses within present and future 65 dBA Ldn contours, unless effective shielding can be provided so that exterior noise level will not exceed 65 dBA Ldn.
- 28-5 Avoid locating new noise-sensitive uses on sites with greater than 60 dBA Ldn where possible.
- 28-6 Ensure that new commercial and industrial projects are designed to minimize noise impacts on neighboring noise-sensitive areas.
- 28-7 Consider adopting a Comprehensive Noise Ordinance to regulate noise emissions.
- 28-8 Adopt performance standards for noise buffer areas between residential and industrial/commercial uses.

EXHIBIT B

Attached to, and incorporated in, Resolution No. 4451 adopted by the City Council of the City of Tracy, December 7, 1982.

STATEMENT OF OVERRIDING CONSIDERATIONS

The three unavoidable significant effects of the General Plan; urbanization of agricultural lands; irretrievable use of energy resources; and possible growth inducing policies, have been considered and addressed. This statement of overriding considerations balances the benefits of the General Plan against these unavoidable changes.

Urbanization of agricultural lands has been previously addressed in reference to the major impacts and mitigation measures in Exhibit A, in the Environmental Impact Report, the Plan Policies, and the Technical Supplement. However, in spite of all these measures, there still remains the unavoidable change that has been reduced to an acceptable level.

The City Council of the City of Tracy finds that there are overriding considerations that support approval of the General Plan, as it relates to urbanization of agricultural lands in that:

- 1) No project (not adopting the revised General Plan) would result in the existing General Plan remaining in force; this would result in a plan that envisions a much larger urban area that would consume substantially more farmland.
- 2) Planned growth is necessary if the city is to continue providing a range of employment and housing opportunities for all socio-economic segments of the community; the only feasible growth areas are currently being utilized for agriculture.
- 3) The plan has been designed to minimize the adverse effects upon agricultural lands and uses.
- 4) The major portion of this area expected to be converted to urban uses is presently within the city limits and has long been committed by the existing General Plan and residential and industrial zoning.

Irretrievable Use of Energy, although not identified as a major impact, has been addressed in the General Plan and Environmental Impact Report with mitigating measures included to reduce energy consumption, conserve energy, and utilize renewable energy sources as provided in Policy Area 27 and Policies 27-1 through 27-6 of the Plan Policies. The irretrievable use of energy resources to accomplish the proposed development still remains.

The City Council of the City of Tracy finds that there are overriding considerations that support approval of the General Plan as it relates to irretrievable use of energy in that no development would be able to occur without such energy use during the construction process.

Exhibit B

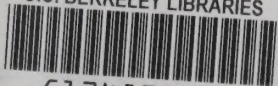
12/7/82

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Possible Growth Inducing Policies. The General Plan is designed to guide and control growth; not to stimulate or discourage growth.

The City Council of the City of Tracy finds that, although some policies, including those providing for low and moderate income housing, commercial and industrial development, and development of recreational facilities, may be regarded as growth-inducing, they will enhance the livability, economic viability, and attractiveness of Tracy; these overriding considerations support approval of the General Plan as it relates to possible growth inducing policies.

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